CCD-FX280E/FX280EU
RMT-708

SERVICE MANUAL

AEP Model
UK Model
Australian Model
Russian Model
CCD-FX280E
E Model
CCD-FX280E/FX280EU

video 8
Handycam
A MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL IV" (9-973-199-11).

SPECIFICATIONS

Video Camera Recorder

System

Video recording system
Two rotary heads, Helical scanning FM system
Audio recording system
Rotary heads, FM system
Video signal
PAL colour, CCIR standards
Usable cassette
8 mm video format cassette (standard 8 mm)
Tape speed
<SP mode> Approx. 20 mm (13/16 in)/second
<LP mode> Approx. 10 mm (13/32 in)/second (playback only)
Recording time
<SP mode> 1.5 hours (P5-90)
Playback time
<SP mode> 1.5 hours (P5-90)
<LP mode> 3 hours (P5-90)
Fastforward/rewind time
Approx. 6 min.,30 sec. (P5-90)
Image device
CCD (Charge Coupled Device)
Viewfinder
Electronic viewfinder (monochrome)
Lens
Combined 12 x power, Filter diameter 52 mm (2 1/8 in), TTL autofocus system, inner focus wide macro system
Focal distance
f = 5.4 — 64.8 mm (7/32 — 2 5/8 in)
F 39 — 468 mm (1 9/16 — 18 1/2 in) (when converted to a 35 mm still camera)
Color temperature
Auto
Minimum illumination
0.8 lux (F 1.8)
Illumination range
0.8 lux to 100,000 lux
Recommended illumination
More than 100 lux

Input and Output connectors

Video output
Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio output
Phono jacks 327 mV, (at output impedance 47 kΩ) impedance less than 2.2 kΩ
RFU DC OUT
Special minijack, DC 5 V
Earphone jack
Minijack
LANC control jack
Stereo mini-minijack (ø 2.5 mm)
MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kΩ (ø 3.5 mm)

— Continued on next page —

8 VIDEO CAMERA RECORDER
SONY®

MICROFILM

General

Power requirements
On battery mounting surface
6.0 V (battery pack)
7.5 V (AC power adaptor)
Average power consumption
5.0 W, during camera recording including the viewfinder
Installation
Vertically, horizontally
Operating temperature
0 °C to 40 °C
(32 °F to 104 °F)
Storage temperature
–20 °C to +60 °C
(–4 °F to +140 °F)
Dimensions
Approx. 120 x 111 x 260 mm
(4 3/4 x 4 3/8 x 10 1/4 in)
(w/h/d)
Mass
860 g (1 lb 14 oz) excluding the battery pack, lithium battery, cassette and shoulder strap
1,080 g (2 lb 6 oz) including the battery pack NP-55, lithium battery CR2025, cassette P5-90, and shoulder strap
Microphone
Electret condenser microphone, monaural type
Supplied accessories
See page 1-1.
RF UNIT (RFU–99E) (only FX280EU)
REMOTE COMMANDER (RMT–708)
(AEP, UK, Russian)

AC power adaptor

Power requirements
110 — 240 V AC, 50/60 Hz
Power consumption
17 W
Output voltage
<DC OUT>
7.5 V, 1.5 A in operating mode
<Battery charge terminal>
10 V, 1.1 A in charge mode
Application
Sony battery packs NP-55, NP-90/90D, NP-77H/77HD, NP-66H, NP-65, NP-55H
Operating temperature
0 °C to 40 °C
(32 °F to 104 °F)
Storage temperature
–20 °C to +60 °C
(–4 °F to +140 °F)
Dimensions
Approx.
103 x 49 x 63 mm
(4 1/8 x 1 15/16 x 2 1/2 in)
(w/h/d)
including projecting parts and controls
Mass
AC-V25A: 320 g (11 oz)
AC-V25B/V25C: 300 g (10 oz)

Design and specifications are subject to change without notice.

Model	Destination	LP-REC	RF UNIT	REMOTE COMMANDER
CCD-FX280E	AEP, UK	×	×	○
	Russian	○	×	○
	E, AUS	○	×	×
CCD-FX280EU	E	○	○	×

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
    - Keep the temperature of the soldering iron around 270°C during repairing.
    - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
    - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

[Zoom lens]

This unit employs three types of lens.
Note that the lenses are interchangeable, however their components are not.

Differentiating the lens

☛ : difference point

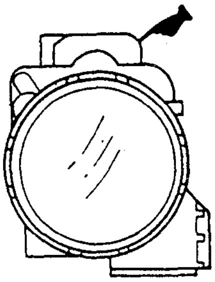
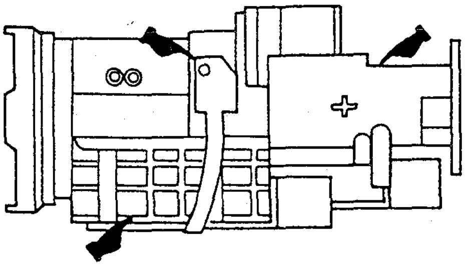
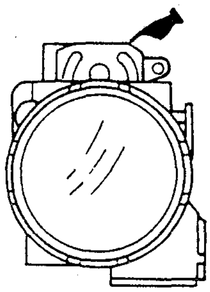
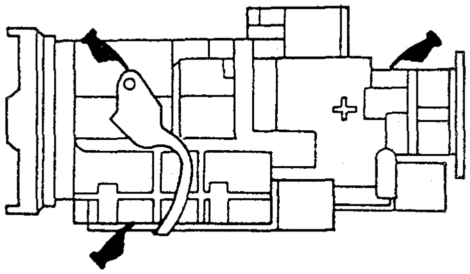
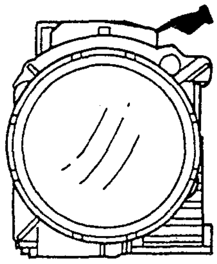
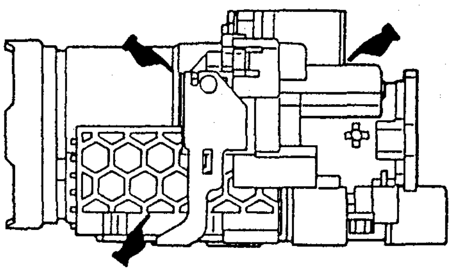
TYPE I (LSV-140A)	TYPE II (VCL-5412WA)
From the front of the lens  From the right side of the lens (as seen from the front) 	From the front of the lens  From the right side of the lens (as seen from the front) 
TYPE III (VCL-5412WB)	
From the front of the lens  From the right side of the lens (as seen from the front) 	

TABLE OF CONTENTS

Section Title Page

SERVICE NOTE

Attach Address Display Location of Actual Size ········ 7
Semiconductor Location ········ 7
Head Cleaning ········ 7
Cleaning method using a Cleaning tape ········ 7

1. GENERAL

Checking Supplied Accessories ········ 1-1
Charging and Installing the Battery Pack ········ 1-2
Inserting a Cassette ········ 1-4
Adjusting the Viewfinder Lens ········ 1-5
Camera Recording ········ 1-5
Hints for Better Shooting ········ 1-7
Checking the Recorded Picture ········ 1-8
Connections for Playback ········ 1-9
Playing Back a Tape ········ 1-10
Using Alternative Power Sources ········ 1-11
Recording with the Date or Time ········ 1-13
Recording with the Age ········ 1-13
Shooting with Backlighting ········ 1-15
Using the PROGRAM AE Function ········ 1-15
Fade-in and Fade-out ········ 1-16
Changing the Mode Settings ········ 1-17
Editing onto Another Tape ········ 1-18
Changing the Lithium Battery ········ 1-19
Resetting the Date or Time ········ 1-20
Playback Modes ········ 1-21
Tips for Using the Battery Pack ········ 1-21
Maintenance Information and Precautions ········ 1-23
Using Your Camcorder Abroad ········ 1-26
Identifying the Parts ········ 1-26
Indicators in the Viewfinder ········ 1-30

2. DISASSEMBLY

2-1. Removal of Microphone (SL) Block ········ 2-1
2-2. Removal of Front Case Block ········ 2-1
2-3. Removal of Cassette Lid Assembly ········ 2-2
2-4. Removal of Cabinet (L) Block Assembly ········ 2-2
2-5. Removal of Cabinet (R) Assembly ········ 2-3
2-6. Removal of EVF Assembly (VF-44 Board) ········ 2-3
2-7. Removal of DD-76 Board ········ 2-4
2-8. Removal of Control Switch Block (FK) ········ 2-4
2-9. Removal of VC-159 Board ········ 2-5
2-10. Removal of VS-123 and AU-182 Board ········ 2-5
2-11. Removal of Zoom Lens Block Assembly ········ 2-6
2-12. Internal Views ········ 2-7
2-13. Circuit Boards Location ········ 2-8

Section Title Page

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram ········ 3-1
3-2. Camera Block Diagram ········ 3-5
3-3. Video (1) Block Diagram ········ 3-9
3-4. Video (2) Block Diagram ········ 3-13
3-5. Servo Block Diagram ········ 3-14
3-6. System Control Block Diagram ········ 3-17
3-7. Audio Block Diagram ········ 3-21
3-8. B/W EVF Block Diagram ········ 3-23
3-9. Power Block Diagram ········ 3-25

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram ········ 4-1
4-2. Printed Wiring Boards and Schematic Diagrams ········ 4-4
- CD-137 Board ········ 4-5
- VC-159 (Camera, Lens Drive) Board ········ 4-7
- VC-159 (Camera) Board ········ 4-9
- VC-159 (Camera) Board ········ 4-13
- VC-159 (Lens Drive) Board ········ 4-17
- VS-123 (REC/PB Head Amplifier, Y/C Process, Electric Volume, Servo/System Control, Signal I/O) Board ········ 4-22
- VS-123 (REC/PB Head Amplifier) Board ········ 4-27
- VS-123 (Y/C Process) Board ········ 4-30
- VS-123 (Electric Volume) Board ········ 4-33
- VS-123 (Servo/System Control) ········ 4-36
- VS-123 (Signal I/O) Board ········ 4-39
- ZB-2 Board ········ 4-42
- SL-38 Board ········ 4-43
- AU-182 Board ········ 4-47
- MA-230 Board ········ 4-51
- VF-44 Board ········ 4-53
- DD-76 Board ········ 4-59

5. REPAIR PARTS LIST

5-1. Exploded Views ········ 5-1
  5-1-1. Front Case Block Assembly ········ 5-1
  5-1-2. Cabinet (L) Block Assembly ········ 5-2
  5-1-3. Cabinet (R) Block Assembly ········ 5-3
  5-1-4. EVF Block Assembly ········ 5-4
  5-1-5. Main Boards Assembly ········ 5-5
  5-1-6. CCD Block Assembly ········ 5-6
  5-1-7. Zoom Lens Assemblies (LSV-140A) (VCL-5412WA) (VCL-5412WB) ········ 5-7
  5-1-8. Cassette Compartment Assembly ········ 5-8
  5-1-9. LS Chassis Assembly ········ 5-9
  5-1-10. Mechanism Chassis Assembly (1) ········ 5-10
  5-1-11. Mechanism Chassis Assembly (2) ········ 5-11
5-2. Electrical Parts List ········ 5-12
HARDWARE LIST ········ 5-27

Section Title Page

6. INTERFACES • IC PIN FUNCTIONS

6-1. Camera Control Micro Processor Pin Function (VC-159 Board IC602: SC424618 MC68HC11MA8FU) ···· 6-1
6-2. Camera Core Pin Function (VC-159 Board IC609: CXD2150R-T6) ···· 6-2
6-3. Mechanism Control Micro Processor Pin Function (VS-123 Board IC505: CXP87132-009R) ···· 6-3
6-4. Mode Control Micro Processor Pin Functions (VS-123 Board IC503: MB89098PFV-G-107-BND) ···· 6-5
6-5. Interface ···· 6-6
  6-5-1. System Control – Video/Audio Block Interface (VS-123 Board) ···· 6-6
  6-5-2. System Control – Servo Block Interface (VS-123 Board) ···· 6-7

7. ADJUSTMENTS

7-1. CAMERA SECTION ADJUSTMENTS ···· 7-1
1-1. Preparations Before Adjustment (Camera Section) ···· 7-1
  1-1-1. List of Service Tools ···· 7-1
  1-1-2. Preparations ···· 7-2
  1-1-3. Precautions ···· 7-4
    1. Switch settings ···· 7-4
    2. Adjusting Procedure ···· 7-4
    3. Subject ···· 7-4
  1-1-4. Adjusting Remote Commander ···· 7-5
    1. Using the adjusting remote commander ···· 7-5
    2. Precautions upon using the adjusting remote commander ···· 7-5
  1-1-5. Page F Address List ···· 7-6
  1-1-6. Data Processing ···· 7-9
1-2. Camera System Adjustment ···· 7-10
    1. Power Supply Voltage Check (DD-76 board) ···· 7-10
    2. Page F Data Initialization ···· 7-10
    3. Page F Data Modification 1 ···· 7-10
    4. 28 MHz Original Oscillation Adjustment (VC-159 board) ···· 7-11
    5. V SUB Adjustment ···· 7-11
    6. VRG Adjustment ···· 7-11
    7. HALL Adjustment ···· 7-12
    8. Flange Back Adjustment ···· 7-13
    9. Flange Back Check ···· 7-13
    10. Picture Frame Setting ···· 7-14
    11. Color Reproduction Adjustment ···· 7-15
    12. IRIS IN/OUT Adjustment ···· 7-16
    13. MAX GAIN Adjustment ···· 7-16
    14. Auto White Balance Standard Data Input ···· 7-17
    15. Auto White Balance Adjustment ···· 7-17
    16. White Balance Check ···· 7-18
    17. VIDEO OUT Level Check ···· 7-19
1-3. Electronic Viewfinder System Adjustment ···· 7-20
  1-3-1. Horizontal Tilt Adjustment ···· 7-20
  1-3-2. Centering Adjustment ···· 7-20
  1-3-3. Horizontal Amplitude Adjustment (VF-44 Board) ···· 7-21
  1-3-4. Vertical Amplitude Adjustment (VF-44 Board) ···· 7-21
  1-3-5. Focus Adjustment (VF-44 Board) ···· 7-21
  1-3-6. Brightness, Contrast Adjustments (VF-44 Board) ···· 7-21
1-4. Arrangement Diagram for Adjustment Parts ···· 7-22

Section Title Page

7-2. MECHANICAL SECTION ADJUSTMENTS ···· 7-27
2-1. Operating without a Cassette ···· 7-27
2-2. Tape Path Adjustment ···· 7-27

7-3. VIDEO SECTION ADJUSTMENTS ···· 7-28
3-1. Preparations Before Adjustment ···· 7-28
  3-1-1. Equipments to be Used ···· 7-28
  3-1-2. Adjusting Precautions ···· 7-28
  3-1-3. Connecting the Equipments ···· 7-29
  3-1-4. Checking the Input Signals ···· 7-30
    1. S VIDEO signal ···· 7-30
    2. VIDEO signal ···· 7-30
  3-1-5. Alignment Tape ···· 7-31
  3-1-6. Output Level and Impedance ···· 7-31
  3-1-7. Service Mode ···· 7-32
    1. Test mode setting ···· 7-32
    2. Emergency code ···· 7-32
    3. Emergency mode ···· 7-33
    4. Bit value discrimination ···· 7-33
    5. Battery voltage check ···· 7-34
    6. Mechanism controller input/output check ···· 7-35
    7. Mode switch and CC DOWN switch check ···· 7-36
    8. Tape top/end sensor check ···· 7-37
    9 Page D address list ···· 7-38
3-2. Power System Adjustments ···· 7-40
    1. Power Voltage Check (DD-76 board) ···· 7-40
3-3. System Control System Adjustments ···· 7-40
    1. Page D Initial Value Input ···· 7-40
    2. Battery End Adjustment ···· 7-41
    3. Battery Down Check ···· 7-41
3-4. Servo System Adjustments ···· 7-42
    1. Switching Position Adjustment (VS-123 board) ···· 7-42
3-5. Video Adjustments ···· 7-42
    1. Playback Frequency Characteristic Adjustment (VS-123 board) ···· 7-43
    2. Flying Erase Check (VS-123 board) ···· 7-43
    3. VXO Oscillation Frequency Check (VS-123 board) ···· 7-43
    4. SYNC AGC Level Adjustment (VS-123 board) ···· 7-44
    5. Comb Filter Adjustment (VS-123 board) ···· 7-44
    6. Emphasis Input Level Adjustment (VS-123 board) ···· 7-45
    7. DE EMPH Level Adjustment (VS-123 board) ···· 7-46
    8. PB Y OUT Level Adjustment ···· 7-46
    9. Y FM Carrier Frequency Adjustment (VS-123 board) ···· 7-47
    10. Y FM Deviation Adjustment (VS-123 board) ···· 7-47
    11. Chroma Emphasis Adjustment 1 (VS-123 board) ···· 7-48
    12. Chroma Emphasis Adjustment 2 (VS-123 board) ···· 7-48
    13. Comb Filter Fine Adjustment (VS-123 board) ···· 7-49
    14. REC Y Level Adjustment (VS-123 board) ···· 7-49
    15. REC L Adjustment (VS-123 board) ···· 7-50
    16. REC CHROMA Level Adjustment (VS-123 board) ···· 7-51
    17. REC ATF Level Check (VS-123 board) ···· 7-51

Section Title Page

3-6. Audio System Adjustment ·· 7-52
 1. E-E Output Level Check (AU-182 board) ············· 7-52
 2. IR Adjustment ·· 7-52
 3. Deviation Adjustment ·· 7-52
 4. Carrier Frequency Check (AU-182 board) ············ 7-53
 5. Carrier Level Check (AU-182 board) ··················· 7-53
 6. Overall Level Characteristic, Distortion Check (AU-182 board) ·· 7-53
 7. Overall Noise Level Check (AU-182 board) ·········· 7-53
3-7. Arrangement Diagram for Adjustment Parts ·············· 7-54

There is the color reproduction standard frame at the back of *the book.*

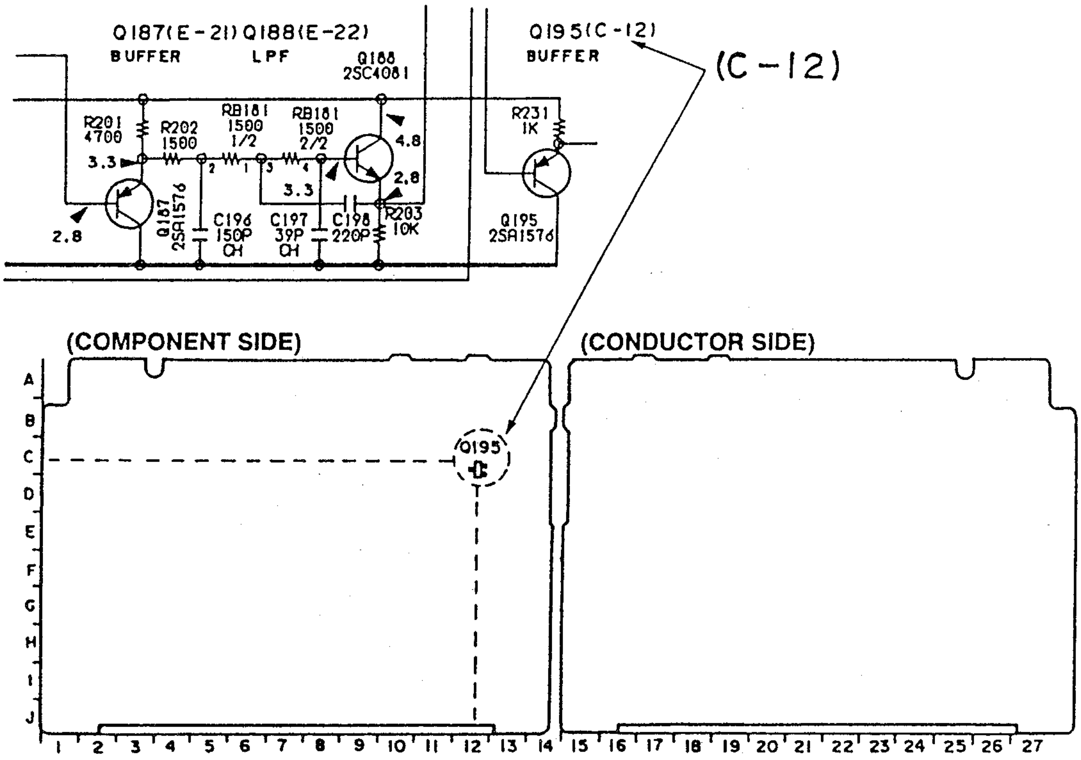
SERVICE NOTE

[ATTACH ADDRESS DISPLAY LOCATION OF ACTUAL SIZE]

In this manual, the mounted locations of all electrical parts in boards are mentioned in blank space of the printed wiring boards. The location display of actual size is attached under the color reproduction frame at the end of this service manual. It will be available if you take a copy of this to a clear sheet.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red in schematic diagrams. This enables to find the location on the board easily when servicing.


Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188
2SC4081
Q195(C-12)
BUFFER
(C-12)
R201
4700
R202
1500
RB181
1500
1/2
RB181
1500
2/2
3.3
4.8
2.8
3.3
2.8
Q187
2SA1576
C196
150P
CH
C197
39P
CH
C198
220P
R203
10K
R231
1K
Q195
2SA1576
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
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J
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[HEAD CLEANING]

After an extended period of use the video image may become indistinet or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [⊠] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

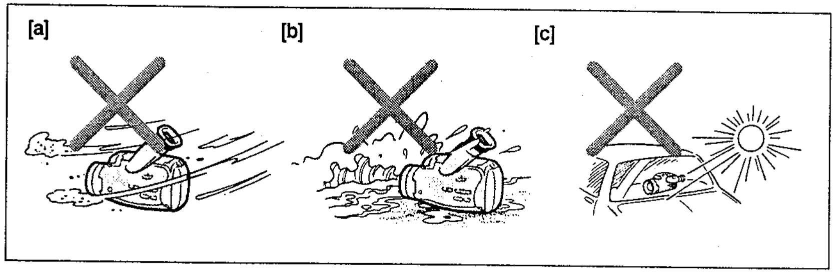
- Use the Cleaning Tape. (Please follow the instructions attached to the cleaning tape.)

Precautions on Camcorder Care

- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired [a].
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction and sometimes the malfunction cannot be repaired [b].
- Never leave the camcorder exposed to temperatures above 60 °C (140 °F), such as in a car parked in the sun or under direct sunlight [c].

Precauciones para el cuidado de la videocámara

- No deje que entre arena en la videocámara. Cuando emplee la videocámara en una playa o en un lugar polvoriento, protéjala de la arena y del polvo. La arena o el polvo pueden causar averías en la unidad que algunas veces resultan irreparables [a].
- No deje que se moje la videocámara. Manténgala alejada de la lluvia o del agua del mar. Si deja que la videocámara se moje podrán producirse averías que algunas veces resultan irreparables [b].
- Nunca deje la videocámara expuesta a temperaturas por encima de los 60 °C, como en el interior de un automóvil estacionado bajo el sol o en un lugar expuesto a la luz solar directa [c].



Please also refer to the precautions starting on p. 53 in addition to the above precautions.

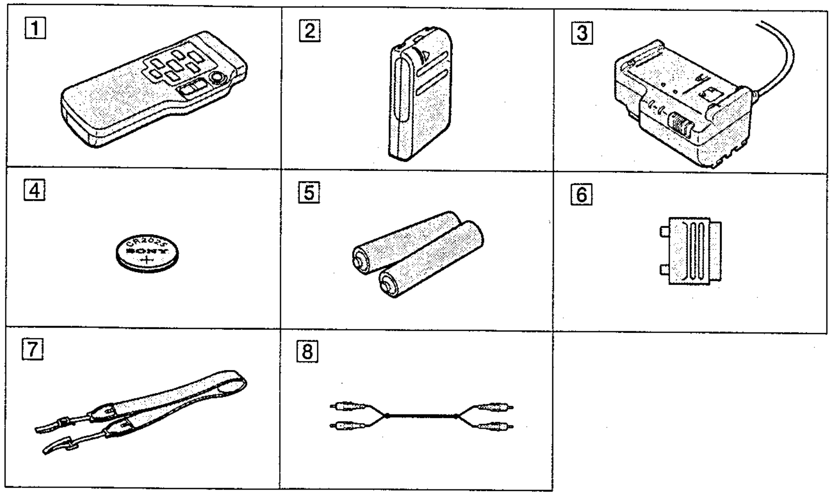
Además de estas precauciones, consulte también por favor las precauciones a partir de la página 53.

Checking Supplied Accessories

Comprobación de los accesorios suministrados

Check that the following accessories are supplied with your camcorder.

Compruebe si los accesorios siguientes han sido suministrados con su videocámara.



1. **Wireless Remote Commander** (1) (p. 24, 67)
2. **NP-55 Battery pack** (1) (p. 8)
3. **AC-V25A/V25B/V25C AC power adaptor** (1) (p. 8, 26)
4. **CR2025 Lithium Battery** (1) (p. 42) (The lithium battery is already installed in your camcorder.)
5. **R6 (size AA) battery for Remote Commander** (2) (p. 68)
6. **21-pin adaptor** (1) (p. 23)
7. **Shoulder strap** (1) (p. 67)
8. **A/V connecting cable** (1) (p. 22)

1. **Telemando inalámbrico** (1) (páginas 24, 67)
2. **Batería NP-55** (1) (página 8)
3. **Adaptador de alimentación de CA AC-V25A/V25B/V25C** (1) (páginas 8, 26)
4. **Pila de litio CR2025** (1) (página 42) (La pila de litio ya se encuentra instalada en su videocámara.)
5. **Pilas R6 (tamaño AA) para el telemando** (2) (página 68)
6. **Adaptador de 21 contactos** (1) (página 23)
7. **Bandolera** (1) (página 67)
8. **Cable de conexión de A/V** (1) (página 22)

SECTION 1
GENERAL

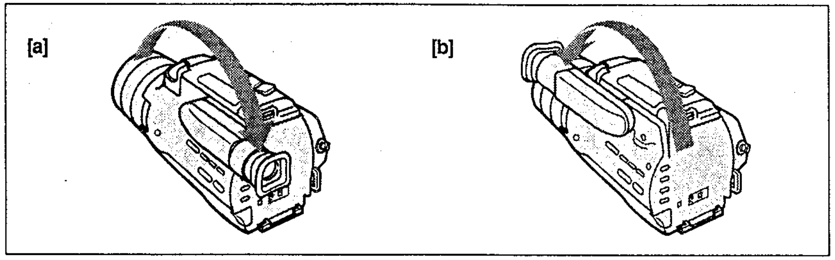
This section is extracted from instruction manual.

After Taking the Camcorder out of the Box

Turn the viewfinder barrel in the direction of the arrow **[a]**. When storing your camcorder, turn the viewfinder barrel in the direction of the arrow **[b]**.

Después de sacar la videocámara de la caja

Gire el visor en la dirección de la flecha **[a]**. Cuando guarde la videocámara, gire el visor en la dirección de la flecha **[b]**.



Charging and Installing the Battery Pack

Carga e instalación de la batería

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V25A/V25B/V25C AC power adaptor.

Antes de utilizar la videocámara tendrá que cargar e instalar la batería. Para cargar la batería, utilice el adaptador de alimentación de CA AC-V25A/V25B/V25C suministrado.

Charging the Battery Pack

Charge the battery pack on a flat surface without vibration.

(1) Connect the mains lead to the mains.
(2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow.
(3) Set the selector to CHARGE. The CHARGE lamp (orange) lights up. Charging begins.

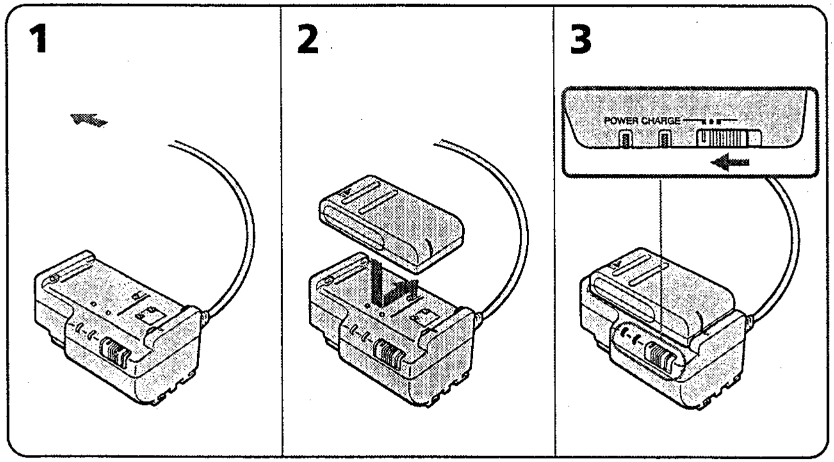
When charging is completed, the CHARGE lamp goes out. Set the selector to the centre position and unplug the unit from mains. Then remove the battery pack and install it on the camcorder.
To stop charging, set the selector to the centre position.

Carga de la batería

Cargue la batería en un lugar nivelado sin vibraciones.

(1) Conecte el cable de alimentación a una toma de corriente.
(2) Alinee el lado derecho de la batería con la línea del adaptador de alimentación de CA y luego deslice la batería en la dirección de la flecha.
(3) Ponga el selector en CHARGE. La lámpara CHARGE (anaranjada) se encenderá. La carga comenzará.

Cuando termine la carga, la lámpara CHARGE se apagará. Ponga el selector en la posición central y desenchufe la unidad de la toma de corriente. Luego, retire la batería e instálela en la videocámara.
Para detener la carga, ponga el selector en la posición central.



Charging Time

Battery pack	Charging time*
NP-55 (supplied)	70
NP-90/90D	215
NP-77H/77HD	170
NP-66H	125
NP-65	105
NP-55H	85

* Approximate minutes to charge an empty battery pack using the AC-V25A/V25B/-V25C. (Lower temperatures require a longer charging time.)

Battery Life

Battery pack	Typical recording time**	Continuous recording time***
NP-55 (supplied)	30	65
NP-90/90D	100	190
NP-77H/77HD	85	160
NP-66H	60	120
NP-65	45	90
NP-55H	35	75

** Approximate minutes when recording while you repeat recording start/stop or zooming and turning the power on/off. The actual battery life may be shorter.

*** Approximate continuous recording time indoors.

See the next page for further information.

Tiempo de carga

Batería	Tiempo de carga*
NP-55 (suministrada)	70
NP-90/90D	215
NP-77H/77HD	170
NP-66H	125
NP-65	105
NP-55H	85

* Minutos aproximados para cargar una batería descargada empleando el AC-V25A/V25B/-V25C. (A bajas temperaturas se requiere un tiempo de carga más largo.)

Duración de la batería

Batería	Tiempo de grabación normal**	Tiempo de grabación continua***
NP-55 (suministrada)	30	65
NP-90/90D	100	190
NP-77H/77HD	85	160
NP-66H	60	120
NP-65	45	90
NP-55H	35	75

** Minutos aproximados cuando se graba repitiendo el inicio/parada de grabación o se usa el zoom y la conexión/desconexión de la alimentación. La duración real de la batería puede que sea más corta.

*** Tiempo aproximado de grabación continua en interiores.

Vea la página siguiente para más información.

Charging and Installing the Battery Pack

Carga e instalación de la batería

Important!

Use the battery completely before recharging!

Before you recharge the battery pack, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery pack attached, and leave the camcorder until the ⊂⊃ indicator flashes and the red lamp flashes rapidly in the viewfinder.

¡Importante!

¡Emplee la batería hasta descargarla completamente antes de volver a cargarla!

Antes de cargar la batería, asegúrese de que ésta haya sido utilizada (esté descargada) completamente. La carga repetida sin que la batería esté completamente descargada causará una disminución en su capacidad de carga. Sin embargo, la capacidad original de la batería podrá recuperarse si la emplea hasta agotarla y luego la vuelve a cargar de nuevo completamente.

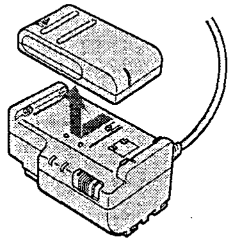
Para descargar la batería, extraiga el videocasete y ponga el conmutador POWER en CAMERA con la batería instalada, y deje así la videocámara hasta que el indicador ⊂⊃ parpadee y la lámpara roja parpadee rápidamente en el visor.

Removing the Battery Pack

Slide the battery pack in the direction of the arrow (see drawing).

Extracción de la batería

Deslice la batería en la dirección de la flecha (vea la ilustración).



Notes on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the mains lead is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the centre position and disconnect the mains lead. After about one minute, reconnect the mains lead and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

Notas sobre la carga de la batería

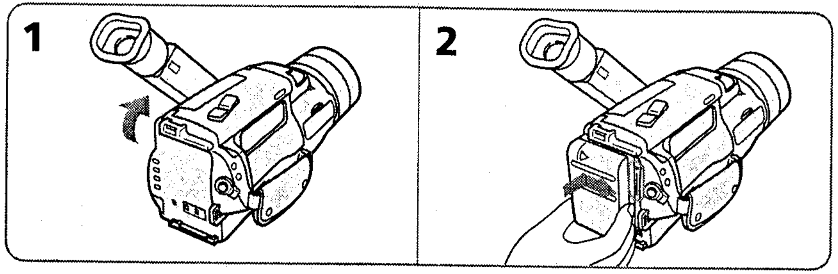
- La lámpara POWER permanecerá encendida durante un rato a pesar de que se extraiga la batería y se desenchufe el cable de la alimentación después de finalizar la carga. Esto es normal.
- Si la lámpara POWER no se enciende, ponga el selector en la posición central y desconecte el cable de alimentación. Después de aproximadamente un minuto, vuelva a conectar el cable de la alimentación y ponga otra vez el selector en CHARGE.
- No podrá operar la videocámara empleando el adaptador de CA mientras se esté cargando la batería.

Installing the Battery Pack

(1) Lift up the viewfinder.
(2) Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.

Instalación de la batería

(1) Levante el visor.
(2) Alinee el lado derecho de la batería con la línea blanca de la videocámara, y deslice la batería hacia la derecha.

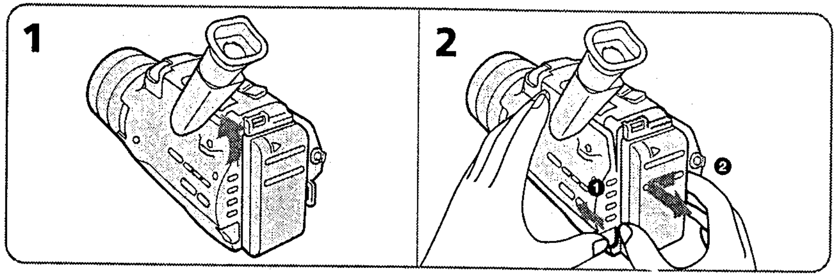


Removing the Battery Pack

(1) Lift up the viewfinder.
(2) While pressing BATT, slide the battery pack to the left.

Para retirar la batería

(1) Levante le visor.
(2) Mientras presiona BATT, deslice la batería hacia la izquierda.

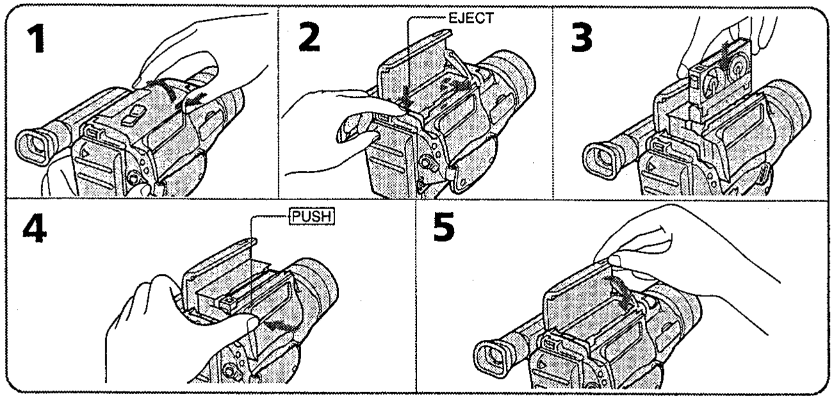


Inserting a Cassette

Colocación de un videocasete

Make sure that the power source is installed.
(1) While sliding the lid lock in the direction of the arrow, lift up the lid.
(2) Press EJECT. The cassette compartment automatically lifts up and opens.
(3) Insert a cassette with the window facing out.
(4) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment.
(5) Close the lid.

Asegúrese de que la fuente de alimentación esté instalada.
(1) Mientras desliza el cierre de la tapa en la dirección de la flecha, levante la tapa.
(2) Presione EJECT. El compartimiento del videocasete se elevará automáticamente y se abrirá.
(3) Introduzca un videocasete con la ventanilla hacia afuera.
(4) Cierre el compartimiento del videocasete presionando la marca "PUSH" en el mismo compartimiento.
(5) Cierre la tapa.



To Eject the Cassette

While sliding the lid lock in the direction of the arrow, lift up the lid of the cassette holder and press EJECT.

Para expulsar el videocasete

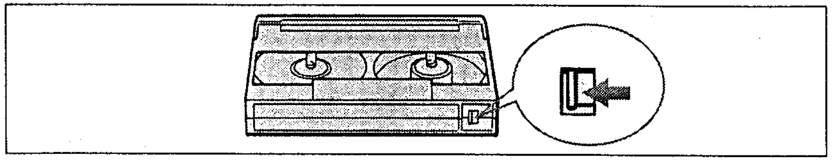
Mientras desliza el cierre de la tapa en la dirección de la flecha, levante la tapa del portavideocasete y presione EJECT.

Preventing Accidental Erasure

To prevent accidental erasure, slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the ▣ and ⏏ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.

Prevención de borrado accidental

Para evitar el borrado accidental, deslice la lengüeta del videocasete de forma que la marca roja quede expuesta. Si trata de grabar con la marca roja expuesta, los indicadores ▣ y ⏏ parpadearán en el visor y no podrá grabar.
Para volver a grabar en la misma cinta, deslice la lengüeta para cubrir la marca roja.



Adjusting the Viewfinder Lens

Before you use the camcorder for the first time or after someone else has used it, focus the viewfinder lens. Make sure that the power source is attached to the camcorder.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA. The lens cover opens.

(2) Turn STANDBY up.

(3) Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.

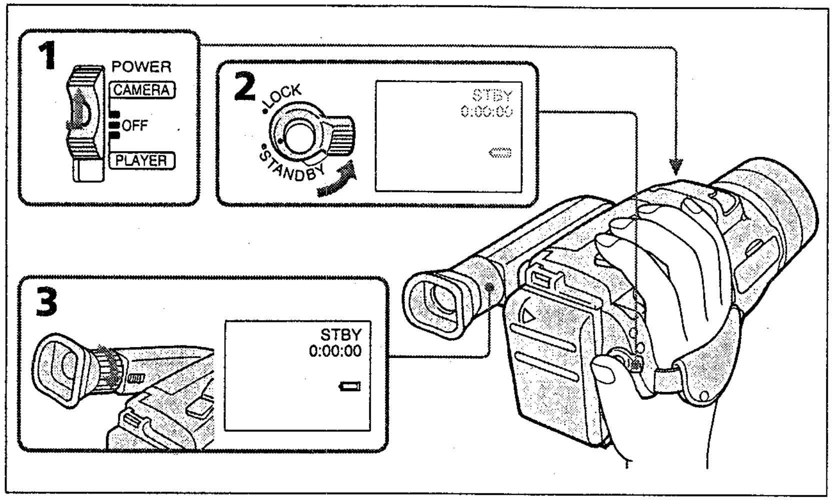
Ajuste de la lente del visor

Antes de utilizar la videocámara por primera vez o después de que la haya utilizado otra persona, enfoque la lente del visor. Asegúrese de que la fuente de alimentación esté instalada en la videocámara.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta CAMERA. La tapa del objetivo se abrirá.

(2) Gire STANDBY hacia arriba.

(3) Gire el anillo de ajuste de la lente del visor de manera que los indicadores en el visor se vean nítidamente.



Camera Recording

Make sure that the power source is installed and a cassette is inserted. The date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day.

Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA.

(2) Turn STANDBY up.

(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears and the red lamp lights up in the viewfinder. The camera recording/battery lamp on the viewfinder barrel also lights up.

Grabación con la videocámara

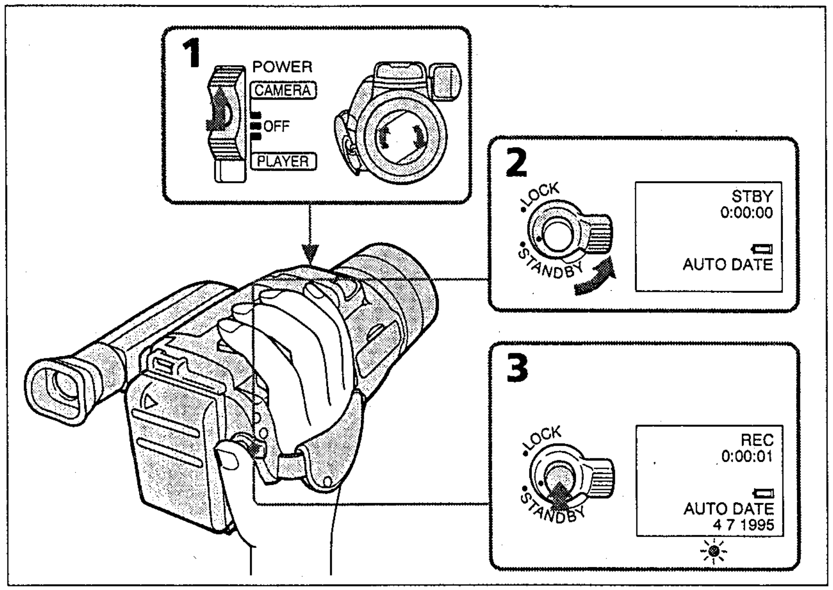
Asegúrese de que la fuente de alimentación esté instalada y de que se haya introducido un videocasete. La fecha se grabará automáticamente durante 10 segundos después de empezar a grabar (característica AUTO DATE). Esta característica sólo funciona una vez al día.

Antes de realizar grabaciones irrepetibles, quizá desee hacer una grabación de prueba para asegurarse de que la videocámara funciona correctamente.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta CAMERA.

(2) Gire STANDBY hacia arriba.

(3) Presione START/STOP. La videocámara empezará a grabar. En el visor aparecerá el indicador "REC" y se encenderá la lámpara roja. La lámpara de grabación con videocámara/estado de la batería, ubicada en el cuerpo del visor también se encenderá.



To Stop Recording Momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (**Standby mode**).

To Finish Recording [b]

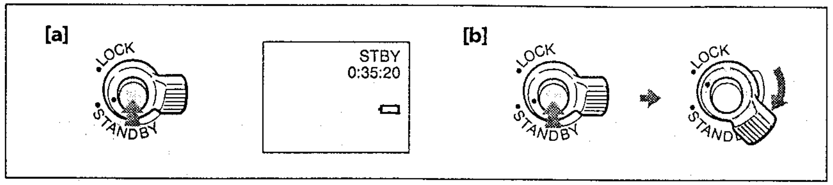
Press START/STOP again. Turn STANDBY down and slide the POWER switch to OFF. The lens cover closes. Then, eject the cassette (p. 12) and remove the battery (p. 11).

Para parar momentáneamente la grabación [a]

Vuelva a presionar START/STOP. El indicador "STBY" aparecerá en el visor (**modo de espera**).

Para finalizar la grabación [b]

Vuelva a presionar START/STOP. Gire STANDBY hacia abajo y deslice el conmutador POWER hasta OFF. La tapa del objetivo se cerrará. Luego, expulse el videocasete (página 12) y retire la batería (página 11).



Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

You can record tapes in SP (standard play) mode only.

Note on the tape counter

The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

See the next page for further information.

Nota sobre el modo de espera

Si deja la videocámara en el modo de espera durante 5 minutos con el videocasete dentro, la videocámara se apagará automáticamente. Esto evita que se descargue la batería y se desgaste la cinta. Para reanudar el modo de espera, gire STANDBY hacia abajo una vez y luego vuelva a girarlo hacia arriba. Para comenzar a grabar, presione START/STOP.

Nota sobre la grabación

Cuando grabe desde el principio de una cinta, haga que ésta avance durante unos 15 segundos antes de empezar a grabar. Así no perderá ninguna escena del principio de la cinta cuando la reproduzca.

Sólo podrá grabar cintas en el modo SP (modo normal).

Nota sobre el contador de cinta

El contador de cinta indica el tiempo de grabación o de reproducción. Empléelo como guía. Habrá un retardo de varios segundos con respecto al tiempo real. Para poner el contador a cero, presione COUNTER RESET.

Vea la página siguiente para más información.

Note on the AUTO DATE feature

The clock is already set at the factory; to London time for United Kingdom and to Paris time for the other European countries. You can reset the clock in the menu system (p. 44). You can change the AUTO DATE settings by selecting ON or OFF in the menu system.

The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:

- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set to ON again in the menu system.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Nota sobre la característica AUTO DATE

El reloj ya ha sido ajustado en fábrica; a la hora de Londres para el Reino Unido y a la de París para los demás países europeos. Podrá reajustar el reloj en el sistema de menú (página 44). Podrá cambiar los ajustes de AUTO DATE seleccionando ON u OFF en el sistema de menú.

La característica AUTO DATE funciona una vez al día. Sin embargo, la fecha podrá aparecer automáticamente más de una vez al día cuando:

- reponga la fecha o la hora.
- expulse la cinta y la introduzca de nuevo.
- pare la grabación antes de que pasen 10 segundos.
- ponga AUTO DATE en OFF una vez y lo vuelva a poner en ON en el sistema de menú.

Cuando pase de interiores a exteriores (o viceversa)

Gire STANDBY hacia arriba y dirija la videocámara hacia un objeto blanco durante unos 15 segundos para que el balance de blancos se ajuste correctamente.

Using the Zoom Feature

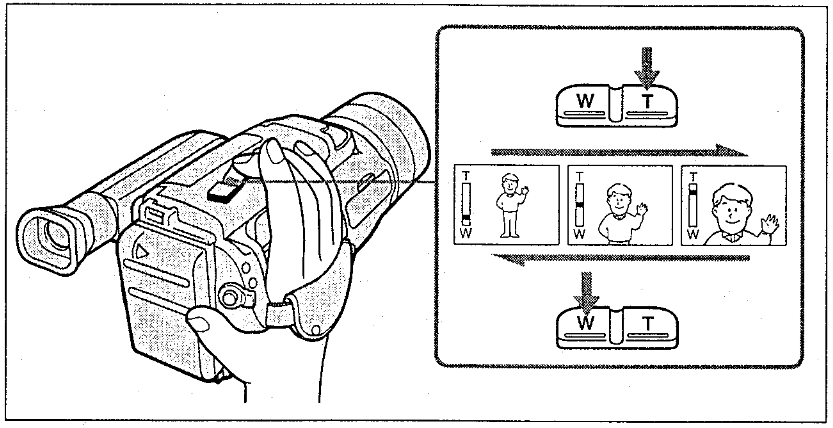
Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.

"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)

Empleo del zoom

"Zooming" es una técnica de grabación que le permite cambiar el tamaño del motivo en la escena. Para que sus grabaciones tengan una apariencia más profesional, emplee poco el zoom.

Lado "T": para telefoto (el motivo aparece más próximo)
Lado "W": para gran angular (el motivo aparece más alejado)



Zooming Speed (Dual speed zooming)

Press the power zoom button firmly for a high-speed zoom, press it softly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, press the "W" side of the power zoom button until the focus is sharp. You can shoot a subject that is at least about 100 cm (3 1/4 feet) away from the lens surface in the telephoto position, or about 1 cm (1/2 inches) in the wide-angle position.

Velocidad del zoom (zoom de dos velocidades)

Presione firmemente el botón del zoom motorizado para emplear una velocidad de zoom alta; presiónelo suavemente para una velocidad de zoom relativamente lenta.

Cuando filme un motivo empleando el zoom en telefoto

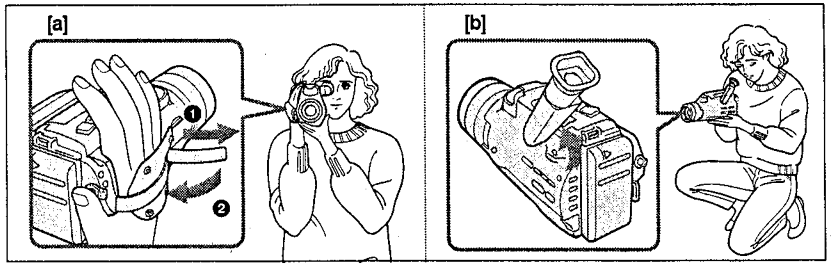
Si no puede enfocar con nitidez empleando el ajuste máximo del zoom en telefoto, presione el lado "W" del botón del zoom motorizado hasta que el motivo quede enfocado nítidamente. Podrá filmar un motivo que se encuentre a un mínimo de 100 cm de la superficie del objetivo en la posición de telefoto, o a aproximadamente 1 cm de la superficie del objetivo en la posición de gran angular.

Hints for Better Shooting

Sugerencias para filmar mejor

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

Cuando filme sujetando la cámara con las manos, los mejores resultados los obtendrá sujetándola según las sujerencias siguientes:



- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting recording angle. Lift the viewfinder up for recording from a low position. (You can turn it to 180 degrees.) **[b]**

Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 65). When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 6.5 mm (9/32 in). Otherwise, the screw may damage the inner parts of the camcorder.

- Sujete firmemente la videocámara y asegúrela con la correa de la empuñadura para poder manejar fácilmente los controles con su dedo pulgar **[a]**.
- Ponga el codo derecho contra su costado.
- Ponga su mano izquierda debajo de la videocámara para apoyarla.
- Ponga su ojo firmemente contra el ocular del visor.
- Emplee el cuadro del visor como guía para determinar el plano horizontal.
- Podrá grabar también desde una posición baja para obtener un interesante ángulo de grabación. Levante el visor para grabar desde una posición baja. (Podrá girarlo hasta 180 grados.) **[b]**

Ponga la videocámara sobre una superficie plana o emplee un trípode

Pruebe a poner la videocámara sobre una mesa o cualquier otra superficie plana de altura apropiada. Si dispone de un trípode para cámara fotográfica también podrá emplearlo con la videocámara (página 65). Cuando emplee un trípode que no sea de Sony, asegúrese de que la longitud de su tornillo sea inferior a 6,5 mm. En caso contrario, el tornillo podría dañar las partes internas de la videocámara.

Using the Viewfinder as a Sports Finder

With the Sports Finder, you can monitor the picture while your eyes are at a distance from the eyecup. You can shoot scenes while moving around.
When using the viewfinder as a Sports Finder, turn the viewfinder lens adjustment ring clockwise until it stops **[c]**.
When returning to the normal viewfinder position, turn the viewfinder lens adjustment ring counterclockwise until the indicators in the viewfinder come into sharp focus.

Cautions on the viewfinder

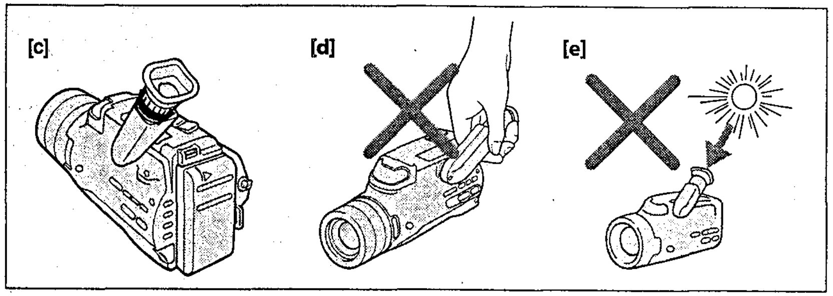
- Do not pick up the camcorder by the viewfinder **[d]**.
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be deformed. Be careful when placing the camcorder under sunlight or by the window **[e]**.

Empleo del visor como localizador deportivo

Con el localizador deportivo, podrá comprobar la imagen con los ojos separados del visor. Podrá filmar escenas mientras se mueve.
Cuando utilice el visor como localizador deportivo, gire el anillo de ajuste de la lente del visor hacia la derecha hasta que se pare **[c]**.
Cuando vuelva a la posición normal del visor, gire el anillo de ajuste de la lente del visor hacia la izquierda hasta que los indicadores en el visor se vean nítidamente.

Precauciones con el visor

- No tome la videocámara por el visor **[d]**.
- No ponga la videocámara de forma que el visor quede orientado hacia el sol. El interior del visor podría deformarse. Tenga cuidado cuando ponga la videocámara bajo el sol o cerca de una ventana **[e]**.



Checking the Recorded Picture

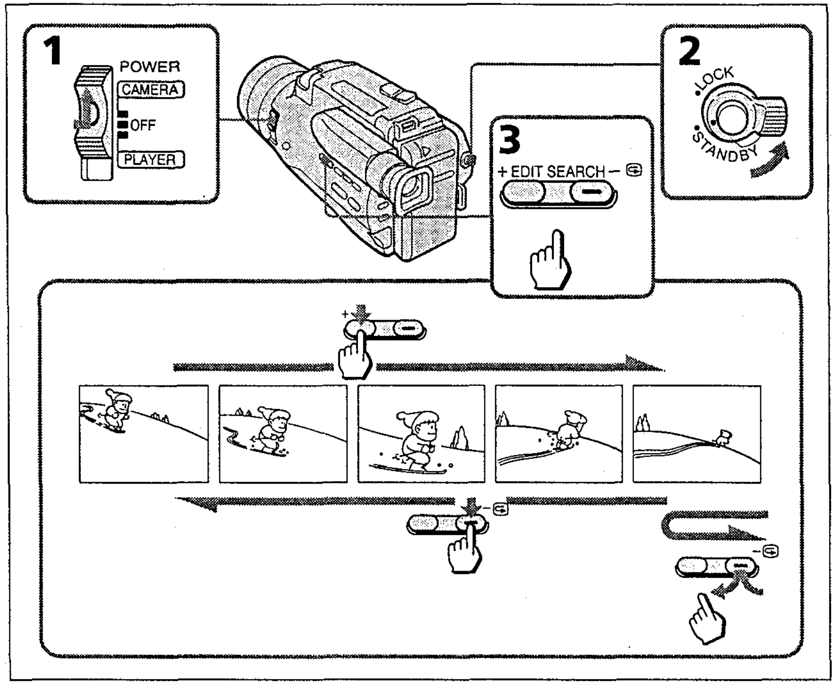
Comprobación de la imagen grabada

The EDITSEARCH function is used to view the recorded picture for a moment during recording. Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA.
(2) Turn STANDBY up.
(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion plays back (**Rec Review**).
You can also monitor the sound by using an earphone (not supplied).
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).

La función EDITSEARCH sirve para ver por un momento la imagen grabada durante la grabación. Empleando la función EDITSEARCH podrá revisar la última escena grabada o comprobar la imagen grabada en el visor.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta CAMERA.
(2) Gire STANDBY hacia arriba.
(3) Presione momentáneamente el lado – (⊜) de EDITSEARCH; los últimos segundos de la parte grabada se reproducirán (**revisión de grabación**).
También podrá comprobar el sonido usando un auricular (no suministrado).
Mantenga presionado del lado – de EDITSEARCH hasta que la videocámara retroceda hasta la escena que desee. La última parte grabada se reproducirá. Para avanzar, mantenga presionado el lado + (**búsqueda de edición**).



To Stop Playback
Release EDITSEARCH.

To Begin Re-recording
Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

Monitoring the Sound While Viewing the Playback Picture in the Viewfinder
Connect earphone (not supplied) to the 🎧 jack. Play back the tape in PLAYER mode (p. 24).

Para cesar la reproducción
Suelte EDITSEARCH.

Para reanudar la grabación
Presione START/STOP. La reanudación de la grabación comenzará desde el punto donde dejó de presionar EDITSEARCH. Siempre que no expulse la cinta, la transición entre la última escena que haya grabado y la escena siguiente que piense grabar se realizará uniformemente.

Para escuchar el sonido durante la contemplación de las imágenes reproducidas en el visor
Conecte unos auriculares (no suministrados) a la toma 🎧. Reproduzca la cinta en el modo PLAYER (página 24).

Connections for Playback

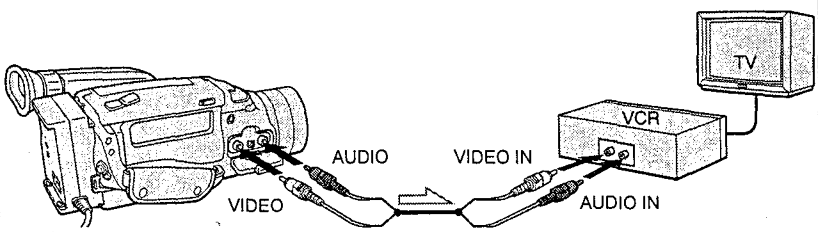
Conexiones para la reproducción

You can use this camcorder as a VCR by connecting it directly to your TV for playback. There are two ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use the mains for the power source (p. 26).

Podrá utilizar esta videocámara como una videograbadora conectándola directamente a su televisor para la reproducción. Hay dos formas de conectar la videograbadora a su televisor. Cuando compruebe la imagen de reproducción conectando la videocámara a su televisor, le recomendamos que utilice la corriente del hogar como fuente de alimentación (página 26).

If your VCR is already connected to a TV
Connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.

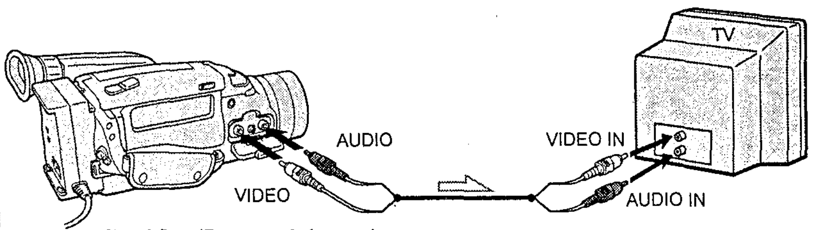
Si su videograbadora ya está conectada a un televisor
Conecte la videocámara a las entradas LINE IN de la videograbadora empleando el cable de conexión A/V. Ponga el selector de entrada de la videograbadora en LINE. Ponga el selector TV/VCR del televisor en VCR.



⇨ : Signal flow/Dirección de las señales

Connecting Directly to a TV
Connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.

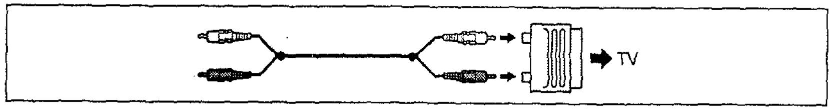
Conexión directa a un televisor
Conecte la videocámara a las entradas del televisor empleando el cable de conexión A/V suministrado. Ponga el selector TV/VCR del televisor en VCR.



⇨ : Signal flow/Dirección de las señales

If your TV has a 21-pin connector (EUROCONNECTOR)
Use the supplied 21-pin adaptor.

Si su televisor tiene un conector de 21 contactos (EUROCONNECTOR)
Emplee el adaptador de 21 contactos suministrado.



To connect a TV or a VCR without Video/Audio input jacks
Use an RFU adaptor (not supplied).

Para conectar a un televisor o a una videograbadora sin tomas de entrada de audio/vídeo
Emplee un adaptador RFU (no suministrado).

Playing Back a Tape

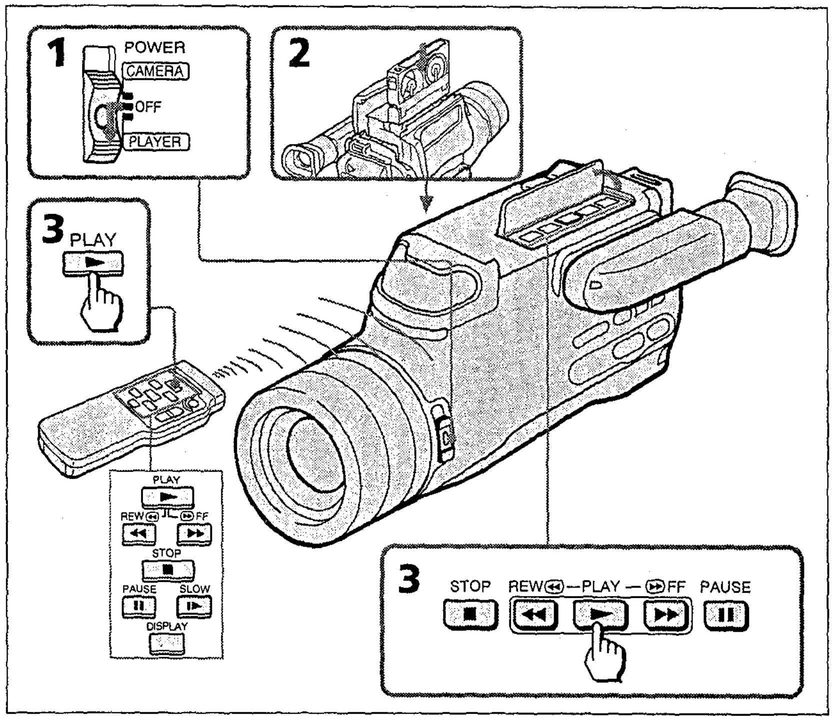
You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR (p. 22). You can use the supplied Remote Commander to control playback.

(1) While pressing the small green button on the POWER switch, slide it to PLAYER.
(2) Insert the recorded tape with the window facing out.
(3) Press ▶. Playback starts.

Reproducción de una cinta

Podrá comprobar la imagen de reproducción en el visor. También podrá comprobarla en la pantalla de un televisor, después de haber conectado la videocámara a un televisor o a una videograbadora (página 22). El telemando suministrado podrá emplearse también para controlar la reproducción.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta PLAYER.
(2) Introduzca una cinta grabada con la ventanilla hacia afuera.
(3) Presione ▶. La reproducción comenzará.



To stop playback, press ■.
To rewind the tape, press ◀◀.
To advance the tape rapidly, press ▶▶.

Para parar la reproducción, presione ■.
Para rebobinar la cinta, presione ◀◀.
Para avanzar la cinta rápidamente, presione ▶▶.

Various Playback Modes

To view a still picture (Playback pause)

Press ❚❚ during playback. To resume playback, press ❚❚ or ▶.

To locate a scene (Picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (Skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▶.

To view the picture in a sequence of stop-motion images

Press EDITSEARCH in playback pause mode. If you keep pressing EDITSEARCH, you can view the picture play back in the forward (+) or reverse (–) direction.

To view the picture at 1/5 speed (Slow Playback) (only with the Remote Commander)

Press ❙▶ on the Remote Commander during playback. To resume normal playback, press ▶. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

Notes on playback

- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.

To display the viewfinder screen indicators on the TV

Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

Varios modos de reproducción

Para ver una imagen fija (pausa de reproducción)

Presione ❚❚ durante la reproducción. Para reanudar la reproducción, presione ❚❚ o ▶.

Para localizar una escena (búsqueda de imagen)

Mantenga presionado ◀◀ o ▶▶ durante la reproducción. Para reanudar la reproducción normal, deje de presionar el botón.

Para comprobar la imagen a alta velocidad mientras la cinta avanza o se rebobina (exploración con salto)

Mantenga presionado ◀◀ mientras rebobina la cinta o ▶▶ mientras la avanza. Para reanudar la reproducción normal, presione ▶.

Para ver la reproducción en una secuencia de imágenes paradas y en movimiento

Presione EDITSEARCH en el modo de pausa de reproducción. Si mantiene presionado EDITSEARCH, podrá ver la imagen de reproducción en la dirección de avance (+) o de retroceso (–).

Para ver la imagen a 1/5 de la velocidad normal (reproducción lenta) (sólo con el telemando)

Presione ❙▶ del telemando durante la reproducción. Para reanudar la reproducción normal, pulse ▶. Si la reproducción lenta dura 1 minuto aproximadamente, ésta cambiará automáticamente a la velocidad de reproducción normal.

Notas sobre la reproducción

- En los diversos modos de reproducción aparecerán rayas en la imagen y el sonido se silenciará.
- Cuando el modo de pausa de reproducción dure más de 5 minutos, la videocámara se pondrá automáticamente en el modo de parada.

Para mostrar los indicadores de la pantalla del visor en el televisor

Presione DISPLAY del telemando. Para borrar los indicadores, presione DISPLAY de nuevo.

Using Alternative Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p. 8), the mains, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	The mains	AC power adaptor AC-V25A/V25B/-V25C (supplied), AC-S10
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-90/90D, NP-77H/77HD, NP-66H, NP-65, NP-55H
In the car	12 V or 24 V car battery	DC pack DCP-77

Note on power sources

Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

This mark indicates that this product is a genuine product related to our 8 mm video equipment.
We recommend that you purchase related 8 mm video products provided with the same mark or products provided with our logotype mark.

Empleo de fuentes de alimentación alternativas

Podrá elegir cualquiera de las fuentes de alimentación siguientes para su videocámara: batería (página 8), corriente del hogar y batería de automóvil de 12/24 V. Elija la fuente de alimentación apropiada según el lugar donde vaya a emplear la videocámara.

Lugar	Alimentación	Accesorio a emplear
Interiores	Corriente del hogar	Adaptador de alimentación de CA AC-V25A/-V25B/ V25C (suministrado), AC-S10
Exteriores	Batería	Batería NP-55 (suministrada), NP-90/90D, NP-77H/77HD, NP-66H, NP-65, NP-55H
En un automóvil	Batería de 12 V o 24 V	Grupo CC DCP-77

Nota sobre las fuentes de alimentación

La desconexión de la fuente de alimentación o la extracción de la batería durante la grabación o la reproducción podría dañar la cinta. Si se diera el caso, reponga inmediatamente el suministro de alimentación.

Esta marca indica que este producto es genuino y está relacionado con nuestro equipo de vídeo de 8 mm.
Al la hora de adquirir nuestro equipo de vídeo de 8 mm, recomendamos elegir los productos de vídeo relacionados de 8 mm que dispongan de esta marca u otros con nuestro logotipo.

Using Alternative Power Sources

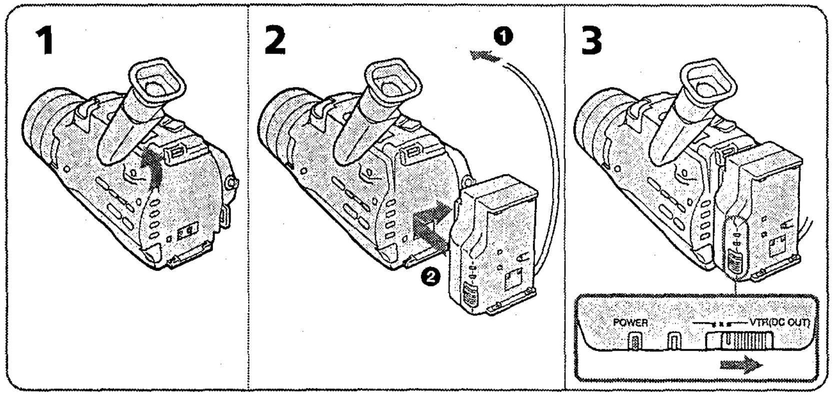
Empleo de fuentes de alimentación alternativas

Using the Mains

To use the supplied AC-V25A/V25B/V25C AC power adaptor:
(1) Lift up the viewfinder.
(2) Connect the mains lead to mains. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder.
(3) Set the selector to VTR (DC OUT).

Empleo de la corriente del hogar

Para emplear el adaptador de alimentación de CA AC-V25A/V25B/V25C suministrado:
(1) Levante el visor.
(2) Conecte el cable de alimentación a una toma de corriente. Conecte la parte inferior del adaptador de alimentación de CA a la superficie donde se monta la batería en la videocámara.
(3) Ponga el selector en VTR (DC OUT).



WARNING
The mains lead must only be changed at a qualified service shop.

PRECAUTION
The set is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes on the POWER lamp
- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the centre position and disconnect the mains lead. After about one minute, reconnect the mains lead and set the selector to VTR (DC OUT) again.

AVISO
El cable de alimentación deberá ser cambiado solamente en un taller de servicio cualificado.

PRECAUCIÓN
El grupo no estará desconectado de la fuente de alimentación de CA (red) siempre y cuando esté conectado a la toma de la pared, a pesar de que lo haya apagado.

Notas sobre la lámpara POWER.
- La lámpara POWER permanecerá encendida durante un rato aunque se desenchufe la unidad después de emplearla. Esto es normal.
- Si la lámpara POWER no se enciende, ponga el selector en la posición central y desconecte el cable de alimentación. Después de aproximadamente un minuto, vuelva a conectar el cable de la alimentación y ponga otra vez el selector en VTR (DC OUT).

To remove the adaptor
The adaptor is removed in the same way as the battery pack (p. 11).

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack
The DC pack is removed in the same way as the battery pack (p. 11).

Options for Charging the Battery Pack

- AC-S10 AC power adaptor:
  You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.

Para retirar el adaptador
El adaptador se retira de igual forma que la batería (página 11).

Empleo de la batería del automóvil

Utilice el grupo DCP-77 (no suministrado). Conecte el cable del grupo CC al receptáculo del encendedor de cigarrillos del automóvil (12 V o 24 V). Conecte el grupo CC a la superficie donde se monta la batería en la videocámara.

Para retirar el grupo CC
El grupo CC se retira de igual forma que la batería (página 11).

Opciones para cargar la batería

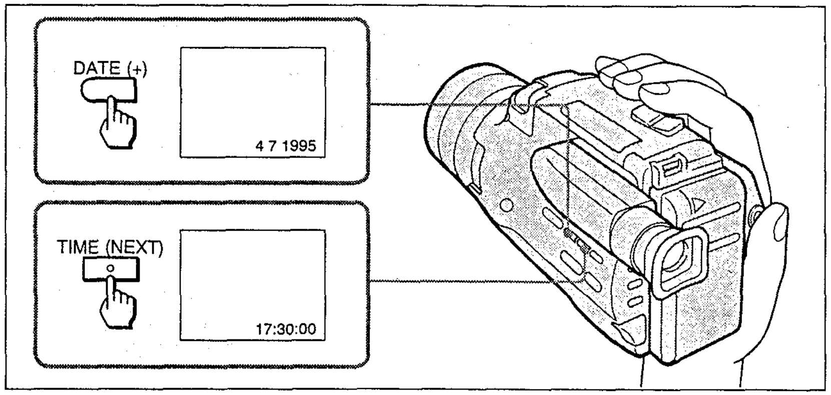
- Adaptador de alimentación de CA AC-S10:
  Con este adaptador podrá cargar la batería, tanto si está cargada como si no, porque dispone de una función de descarga.

Recording with the Date or Time

Grabación con la fecha o la hora

Before you start recording, press DATE (+) or TIME (NEXT). You can record the date or time displayed in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date, time or age indicator, no indicator in the viewfinder is recorded.
The clock is already set at the factory; to London time for United Kingdom and to Paris time for the other European countries. You can reset the clock in the menu system (p. 44).

Antes de comenzar a grabar, presione DATE(+) o TIME (NEXT). Podrá grabar la fecha o la hora mostrada en el visor junto con la imagen. No podrá grabar la fecha y la hora al mismo tiempo. Exceptuando el indicador de la fecha, la hora o la edad, ningún otro indicador del visor se grabará.
El reloj ya ha sido ajustado en fábrica; a la hora de Londres para el Reino Unido y a la de París para los demás países europeos. Podrá reajustar el reloj en el sistema de menú (página 44).



To Stop Recording with the Date or Time

Press DATE (+) or TIME (NEXT) again. The date or time indicator disappears. The recording continues.

Para parar la grabación con la fecha o la hora

Presione otra vez DATE (+) o TIME (NEXT). El indicador de la fecha o la hora desaparecerá. La grabación continuará.

Recording with the Age

Grabación con la edad

By presetting your child's birth date in your camcorder, you can record your child's age in years and months on your tape. Once you enter the birth date of your child, the camcorder's clock will automatically update the age of your child. You can preset up to three birth dates or events in the camcorder's memory.

Preajustando en la videocámara la fecha de nacimiento de su hijo(a), podrá grabar con su edad mostrada en años y meses. Una vez introducida la fecha de nacimiento de su hijo(a), el reloj de la videocámara actualizará automáticamente la edad de su hijo(a). En la memoria de la videocámara podrá preajustar hasta tres fechas de nacimiento o de acontecimientos.

Storing a Birth Date in Your Camcorder

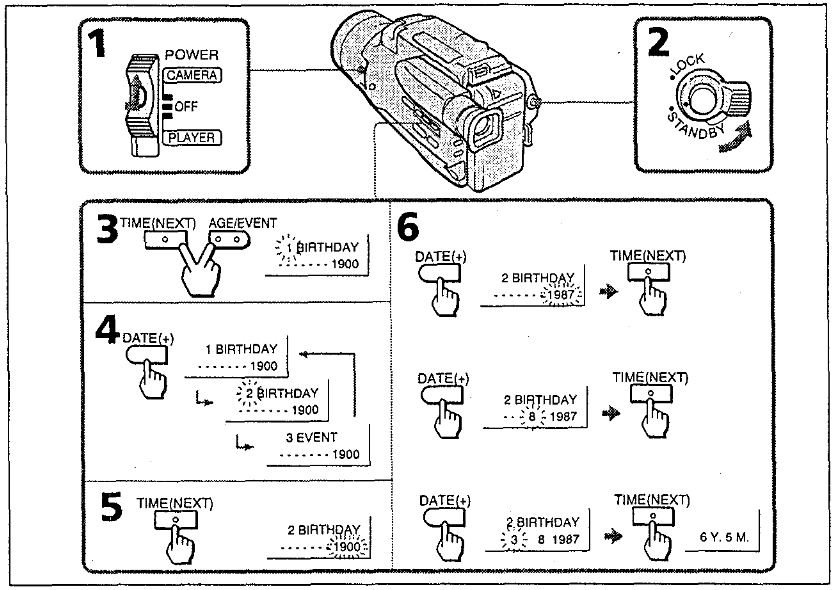
Before storing a birth date, make sure a power source and the lithium battery are installed, and the date setting is correct. The following procedure stores "3 8 1987" in memory 2 as an example.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA.
(2) Turn STANDBY up.
(3) Press TIME (NEXT) and AGE/EVENT simultaneously for a few seconds until the "1 BIRTHDAY--- --1900" indicator appears in the viewfinder.
(4) Press DATE (+) to select "2 BIRTHDAY."
(5) Press TIME (NEXT). The "1900" indicator flashes.
(6) Enter the birth date by adjusting the flashing indicators of the year, month and day by pressing DATE (+) and TIME (NEXT). Note that when you keep DATE (+) pressed, the digits advance faster.

Almacenamiento de una fecha de nacimiento en su videocámara

Antes de almacenar una fecha de nacimiento, asegúrese de que la fuente de alimentación y la pila de litio estén instaladas, y de que el ajuste de la fecha sea correcto. Mediante el procedimiento siguiente se almacena a modo de ejemplo la fecha "3 de agosto de 1987" en el número de memoria 2.

(1) Mientras presiona el pequeño botón verde del conmutador POWER, deslícelo hasta CAMERA.
(2) Gire STANDBY hacia arriba.
(3) Presione TIME (NEXT) y AGE/EVENT simultáneamente durante unos cuantos segundos hasta que el indicador "1 BIRTHDAY--- --1900" aparezca en el visor.
(4) Presione DATE (+) para seleccionar "2 BIRTHDAY."
(5) Presione TIME (NEXT). El indicador "1900" parpadeará.
(6) Introduzca la fecha de nacimiento ajustando los indicadores parpadeantes del año, mes, y día presionando DATE (+) y TIME (NEXT). Tenga en cuenta que cuando mantenga presionado DATE (+), los dígitos avanzarán más rápidamente.



Note on the birth or event dates indicators
Each time you press DATE (+), the display in the viewfinder changes from "1 BIRTHDAY" to "2 BIRTHDAY," "3 EVENT" and comes back to "1 BIRTHDAY."

Erasing the Age Indicator in the Viewfinder

Press AGE/EVENT repeatedly until no indicator appears.

If You Missed the Correct Number with DATE (+)

Keep pressing DATE (+). The indicator changes as follows:

Year: "1900" → "1901" → --- → Current year
↑— Current year minus 99 —┘

Month: "1" → "2" → --- → "12" → "---"
↑——————————————┘

Day: "1" → "2" → --- → "31"
↑————————┘

To Correct the Setting

Repeat steps from 3 to 6.

To Preset the Year before 1900

(1) After step 5, keep pressing DATE (+) until the current year is displayed.
(2) Press DATE (+) again. The year goes back 99 years.
(3) Go to step 6.

When in 2000

"--- -- 1901" is displayed in step 3. After that, it advances every year as "1902, 1903 ......"

To Cancel the Stored Birth Date

(1) Press AGE/EVENT and TIME (NEXT) simultaneously to make "1 BIRTHDAY" appear in the viewfinder. Press DATE (+) to select a birth date to cancel.
(2) Press TIME (NEXT) twice. The month indicator flashes.
(3) Press DATE (+) repeatedly until "--- --" appears.
(4) Press TIME (NEXT). The selected birth date is canceled from the memory and is not displayed when you press AGE/EVENT.

Nota sobre los indicadores de las fechas de nacimiento o de acontecimiento
Cada vez que presione DATE (+), la visualización en el visor cambiará de "1 BIRTHDAY" a "2 BIRTHDAY," "3 EVENT" y regresará a "1 BIRTHDAY."

Borrado de la indicación de la edad en el visor

Presione AGE/EVENT repetidamente hasta que no aparezca ningún indicador.

Si pasa el número correcto con DATE (+)

Mantenga presionado DATE (+). El indicador cambiará de la forma siguiente:

Año: "1900" → "1901" → --- → Año actual
↑— Año actual menos 99 —┘

Mes: "1" → "2" → --- → "12" → "---"
↑——————————————┘

Día: "1" → "2" → --- → "31"
↑————————┘

Para corregir el ajuste

Repita los pasos 3 a 6.

Para preajustar un año anterior a 1900

(1) Después del paso 5, mantenga presionado DATE (+) hasta que se visualice al año actual.
(2) Presione otra vez DATE (+). El año retrocederá 99 años.
(3) Vaya al paso 6.

Cuando esté en el año 2000

"--- --1901" se visualizará en el paso 3. Después, el año avanzará a "1902, 1903......"

Para cancelar la fecha de nacimiento almacenada

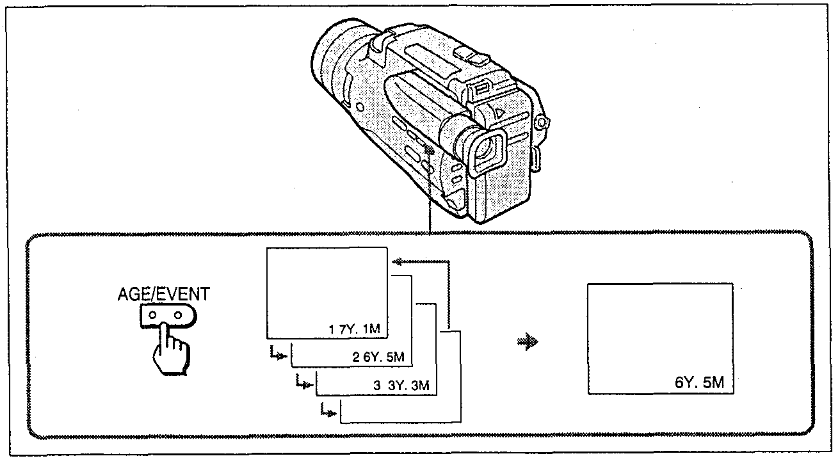
(1) Presione AGE/EVENT y TIME (NEXT) simultáneamente hasta que aparezca "1 BIRTHDAY" en el visor. Presione DATE (+) para seleccionar la fecha de nacimiento que desee cancelar.
(2) Presione TIME (NEXT) dos veces. El indicador del mes parpadeará.
(3) Presione DATE (+) repetidamente hasta que aparezca "--- --."
(4) Presione TIME (NEXT). La fecha de nacimiento seleccionada se borrará de la memoria y no se visualizará cuando presione AGE/EVENT.

Recording with the Age

Make sure the age is set. While recording, press AGE/EVENT to select memory 1, 2 or 3. You can record the time elapsed since the date set, for example, your child's birthday. Except for the age, date or time (p. 29) indicator, no indicator in the viewfinder is recorded.

Grabación con la edad

Asegúrese de que la edad esté ajustada. Mientras graba, presione AGE/EVENT para seleccionar la memoria 1, 2 ó 3. Podrá grabar el tiempo transcurrido desde la fecha ajustada, por ejemplo, el cumpleaños de su hijo(a). Exceptuando el indicador de la edad, de la fecha o de la hora (página 29), ningún otro indicador del visor se grabará.



Note on the age indicator
Each time you press AGE/EVENT, the indicator changes from 1 "The first age" to 2 "The second age," 3 "The third age" and back to no indicator. Items for which no setting has been made will be skipped. The 1, 2 or 3 indicator disappears after one second.

To Stop Recording with the Age

Press AGE/EVENT repeatedly until the age indicator disappears.

To Correct the Age Settings while Recording

Press AGE/EVENT repeatedly until the desired age appears. The recording starts after the 1, 2 or 3 indicator disappears.

When the camcorder is connected to a TV
The age indicator appears on the TV screen after the 1, 2 or 3 indicator disappears in the viewfinder screen.

Nota sobre el indicador de la edad
Cada vez que presione AGE/EVENT, el indicador cambiará de 1 "La primera edad" a 2 "La segunda edad" y a 3 "La tercera edad" y luego volverá a mostrarse sin ningún indicador. Los ítemes para los que no se hayan hecho ajustes se omitirán. El indicador 1, 2 ó 3 desaparecerá después de un segundo.

Para parar la grabación con la edad

Presione AGE/EVENT repetidamente hasta que el indicador de la edad desaparezca.

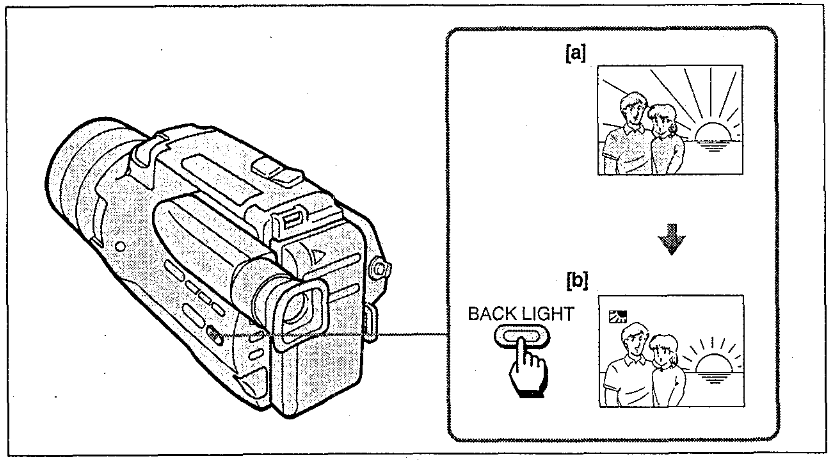
Para corregir los ajustes de la edad mientras graba

Presione AGE/EVENT repetidamente hasta que aparezca la edad deseada. La grabación comenzará después de que desaparezca el indicador 1, 2 ó 3.

Cuando la videocámara esté conectada a un televisor
El indicador de la edad aparecerá en la pantalla del televisor después de que el indicador 1, 2 ó 3 desaparezca de la pantalla del visor.

Shooting with Backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.
Press BACK LIGHT. The ▣ indicator appears in the viewfinder.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▣ indicator in the viewfinder disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

- On snow, e.g. at a ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

Filmación con iluminación de fondo

Cuando filme un motivo con la fuente de luz detrás de él o un motivo con un fondo iluminado, utilice la función BACK LIGHT.
Presione BACK LIGHT. El indicador ▣ aparecerá en el visor.

[a] El motivo está demasiado oscuro debido a la iluminación de fondo.
[b] El motivo adquiere brillo con la compensación de iluminación de fondo.

Después de la filmación

No se olvide de cancelar esta condición de ajuste presionando otra vez BACK LIGHT. El indicador ▣ en el visualizador desaparecerá. De lo contrario, la imagen tendrá un brillo excesivo bajo condiciones de iluminación normal.

Esta función también será eficaz bajo las condiciones siguientes:

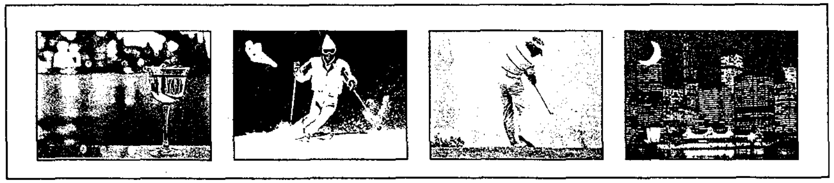
- En la nieve, por ejemplo, en una estación invernal
- En la playa bajo un sol intenso
- Cuando el motivo tenga una fuente de luz próxima o un espejo que refleje luz
- Cuando un motivo blanco tenga un fondo blanco. Especialmente cuando filme a una persona con ropas brillantes de seda o fibra sintética, su rostro tenderá a oscurecerse si no emplea esta función.

Using the PROGRAM AE Function

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action, or record night views.

Selecting the Best Mode

Select one of four modes, referring to the following.



Portrait mode
- A still subject such as a person or a flower
- Zooming in on a subject in the telephoto mode
- A subject behind an obstacle such as a net

Sports mode
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape from a moving car

High-speed shutter mode
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in a clear, sharp picture

Twilight mode
- Recording night views, neon signs or fireworks

Empleo de la función PROGRAM AE

Podrá seleccionar de entre cuatro modos PROGRAM AE (exposición automática) para adaptar su situación de filmación.
Cuando emplee PROGRAM AE, podrá obtener un efecto de retrato (el motivo estará enfocado y el fondo desenfocado), captar la acción a alta velocidad o grabar escenas nocturnas.

Selección del mejor modo

Seleccione uno de los cuatro modos consultando lo siguiente.

Modo de retrato
- Un motivo fijo como, por ejemplo, una persona o una flor.
- Acercamiento del motivo con el zoom en el modo de telefoto.
- Un motivo situado detrás de un obstáculo tal como una red.

Modo deportivo
- Escenas deportivas en exteriores como, por ejemplo, fútbol, tenis, golf o esquí.
- Un paisaje desde un vehículo en movimiento.

Modo de obturador de alta velocidad
- El movimiento al golpear una pelota de golf o un partido de tenis con buen tiempo y la pelota claramente captada.
- Reproducción de ciertas escenas con movimientos a gran velocidad en una imagen clara y nítida.

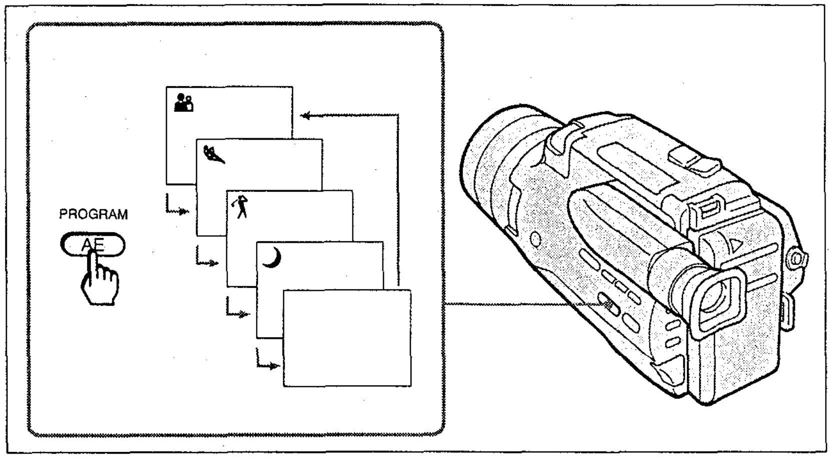
Modo de crepúsculo
- Grabación de vistas nocturnas, luces de neón o fuegos artificiales.

Using the PROGRAM AE Function

Press PROGRAM AE. The indicator of the selected PROGRAM AE mode appears in the viewfinder.

Empleo de la función PROGRAM AE

Presione PROGRAM AE. El indicador del modo PROGRAM AE seleccionado aparecerá en el visor.



Note on shutter speed

The shutter speed in each PROGRAM AE mode is as follows:
Portrait mode — between 1/50 to 1/2000
Sports mode — between 1/50 to 1/500
High-speed shutter mode — 1/4000
Twilight mode — 1/50
Normal mode — 1/50

Nota sobre la velocidad del obturador

La velocidad del obturador en cada modo PROGRAM AE es la siguiente:
Modo de retrato — entre 1/50 y 1/2.000
Modo deportivo — entre 1/50 y 1/500
Modo de obturador de alta velocidad — 1/4.000
Modo de crepúsculo — 1/50
Modo normal — 1/50

Fade-in and Fade-out

You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black or mosaic while the sound increases.
When fading out, the picture gradually fades to black or mosaic while the sound decreases.

When Fading in [a]

(1) While the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When Fading out [b]

(1) During recording, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.

Aparición gradual y desvanecimiento

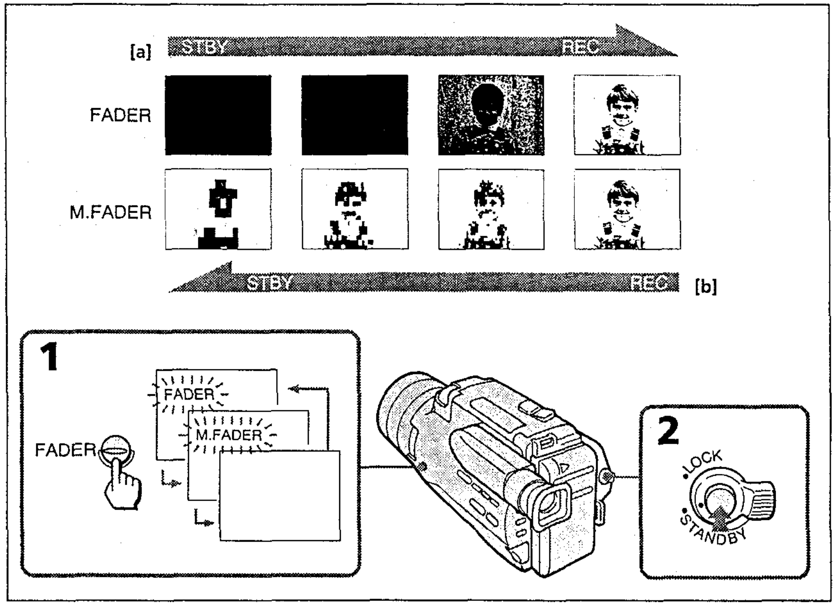
Podrá hacer que la imagen aparezca gradualmente o se desvanezca para dar a sus grabaciones un aspecto profesional.
Cuando realice la aparición gradual, la imagen aparecerá gradualmente desde un fondo negro o de mosaico a la vez que aumenta el sonido.
Cuando realice el desvanecimiento, la imagen desaparecerá gradualmente hacia un fondo negro o de mosaico a la vez que el sonido disminuye.

Para la aparición gradual [a]

(1) Mientras la videocámara está en el modo de espera, presione FADER. El indicador de aparición gradual y desvanecimiento empezará a parpadear.
(2) Presione START/STOP para comenzar a grabar. El indicador de aparición gradual y desvanecimiento dejará de parpadear.

Para el desvanecimiento [b]

(1) Durante la grabación, presione FADER. El indicador de aparición gradual y desvanecimiento empezará a parpadear.
(2) Presione START/STOP para parar la grabación. El indicador de aparición gradual y desvanecimiento dejará de parpadear y luego la grabación cesará.



To Cancel the Fade-in/Fade-out Function

Before pressing START/STOP, press FADER until the fade indicator disappears.

When the date/time or age indicator is displayed

The date/time or age indicator does not fade in nor fade out.

Para cancelar la función de aparición gradual/desvanecimiento

Antes de presionar START/STOP, presione FADER hasta que desaparezca el indicador de aparición gradual y desvanecimiento.

Cuando el indicador de la fecha/hora o la edad esté visualizado

El indicador de la fecha/hora o la edad no aparecerá gradualmente ni se desvanecerá.

Changing the Mode Settings

Cambio de los ajustes de modo

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu in the viewfinder.

(2) Press ↑ or ↓ to select the desired item, then press EXECUTE.

(3) Press ↑ or ↓ to set the desired mode, then press EXECUTE. If you want to change the other modes, repeat steps 2 and 3.

(4) Press MENU to erase the menu display.

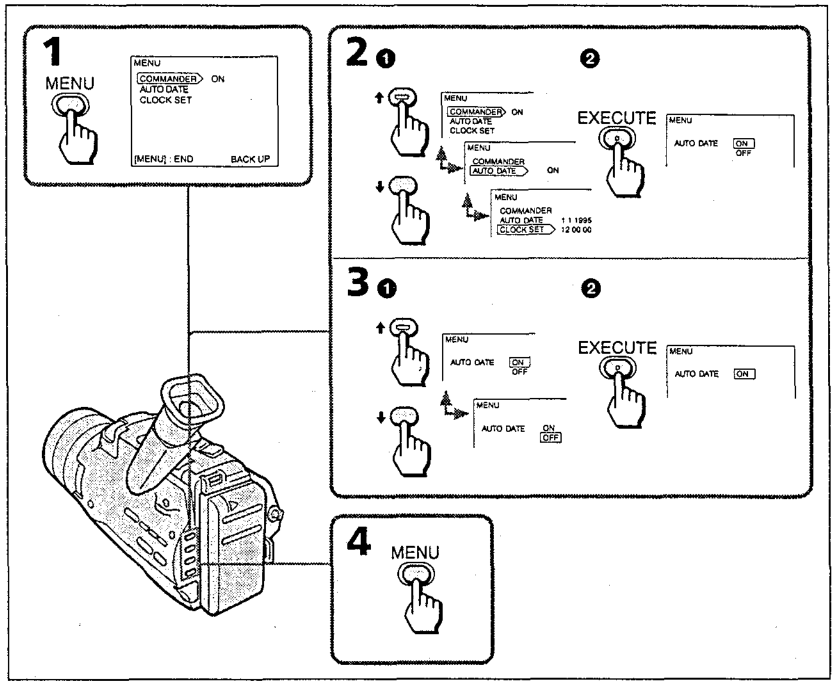
Podrá cambiar los ajustes de modo en el sistema de menú para disfrutar aún más de las características y de las funciones de la videocámara.

(1) Presione MENU para visualizar el menú en el visor.

(2) Presione ↑ o ↓ para seleccionar el ítem deseado y luego presione EXECUTE.

(3) Presione ↑ o ↓ para fijar el modo deseado y luego presione EXECUTE. Si desea cambiar a otros modos, repita los pasos 2 y 3.

(4) Presione MENU para cancelar la visualización de menú.


1
MENU
MENU
COMMANDER ON
AUTO DATE
CLOCK SET
[MENU] : END
BACK UP
2 ❶
❷
MENU
COMMANDER ON
AUTO DATE
CLOCK SET
MENU
COMMANDER
AUTO DATE ON
MENU
COMMANDER
AUTO DATE 1 1 1995
CLOCK SET 12 00 00
EXECUTE
MENU
AUTO DATE ON
OFF
3 ❶
❷
MENU
AUTO DATE ON
OFF
MENU
AUTO DATE ON
OFF
EXECUTE
MENU
AUTO DATE ON
4
MENU

Note on BACK UP

When the BACK UP indicator appears on the menu display, the settings are retained even when the battery is removed, as long as the lithium battery is in place.

Nota sobre BACK UP

Cuando en la visualización del menú aparezca el indicador BACK UP, los ajustes serán retenidos incluso si se retira la batería, siempre y cuando la pila de litio se encuentre instalada.

Selecting the Mode Setting of Each Item

Item for both CAMERA and PLAYER Mode

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder (p. 69).
- Select OFF when not using the Remote Commander.

Items for CAMERA Mode only

AUTO DATE <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started (p. 16).
- Select OFF to not record the date.

CLOCK SET
Select this item to reset the date or time (p. 44).

Item for PLAYER Mode only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing (p. 40).
- Normally select OFF.

Selección del modo de ajuste de cada ítem

Ítem para el modo CAMERA y PLAYER

COMMANDER <ON/OFF>
- Seleccione ON cuando emplee el telemando suministrado para la videocámara (página 69).
- Seleccione OFF cuando no emplee el telemando.

Ítemes para el modo CAMERA solamente

AUTO DATE <ON/OFF>
- Seleccione ON para grabar la fecha durante 10 segundos después de comenzar la grabación (página 16).
- Seleccione OFF para no grabar la fecha.

CLOCK SET
Seleccione este ítem para reponer la fecha o la hora (página 44).

Ítem para el modo PLAYER solamente

EDIT <ON/OFF>
- Seleccione ON para minimizar el deterioro de la imagen cuando haga la edición (página 40).
- Seleccione OFF normalmente.

Editing onto Another Tape

Edición en otra cinta

You can create your own video programme by editing with any other 8 mm, Hi8, VHS, S-VHS, VHSC, S-VHSC or Betamax VCR that has audio/video inputs.

Before Editing

Connect the camcorder to the VCR using the supplied A/V connecting cable (p. 22).
Set the input selector on the VCR to LINE, if available.

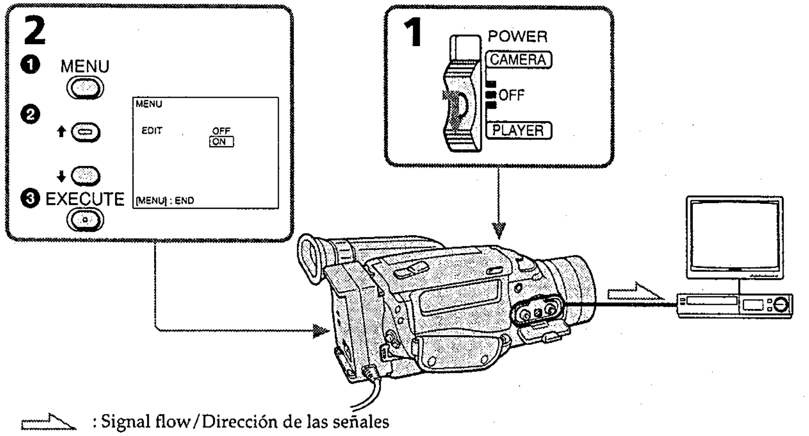
(1) Set the POWER switch to PLAYER.
(2) Set EDIT to ON in the menu system (p. 39).

Podrá crear sus propios programas de vídeo editando con cualquier otra videograbadora 8 mm, Hi8, VHS, S-VHS, VHSC, S-VHSC o Betamax que tenga entradas de audio/vídeo.

Antes de editar

Conecte la videocámara a la videograbadora empleando el cable de conexión A/V suministrado (página 22).
Ponga el selector de entrada de la videograbadora en LINE, si tiene esa posición.

(1) Ponga el conmutador POWER en PLAYER.
(2) Ponga EDIT en ON en el sistema de menú (página 39).



: Signal flow/Dirección de las señales

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then set the camcorder in the playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in the recording pause mode.
(4) Press **II** on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing

Press ■ on both the camcorder and the VCR.

Use of the EDITSEARCH button

You can play back the tape in normal/reverse direction by holding down EDITSEARCH during playback pause mode. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Note on the DISPLAY function

If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Inicio de la edición

(1) Introduzca una cinta sin grabar (o una cinta que desee volver a grabar) en la videograbadora e introduzca su cinta grabada en la videocámara.
(2) Reproduzca la cinta grabada en su videocámara hasta que localice el punto donde desee iniciar la edición, luego ponga la videocámara en el modo de pausa de reproducción.
(3) En la videograbadora, localice el punto de inicio de la grabación y póngala en el modo de pausa de grabación.
(4) Presione simultáneamente **II** de la videocámara y de la videograbadora para iniciar la grabación.

Para editar más escenas

Repita los pasos 2 a 4.

Para parar la edición

Presione ■ en la vieocámara y en la videograbadora.

Empleo del botón EDITSEARCH

Podrá reproducir la cinta en la dirección de avance/retroceso manteniendo presionado EDITSEARCH durante el modo de pausa de reproducción. También podrá reproducir imágenes fijas a intervalos especificados presionando EDITSEARCH intermitentemente.

Nota sobre la función DISPLAY

Si se visualizan los indicadores del visor en la pantalla del televisor, haga desaparecer los indicadores presionando DISPLAY del telemando para que no se superpongan en la cinta editada.

Additional Information

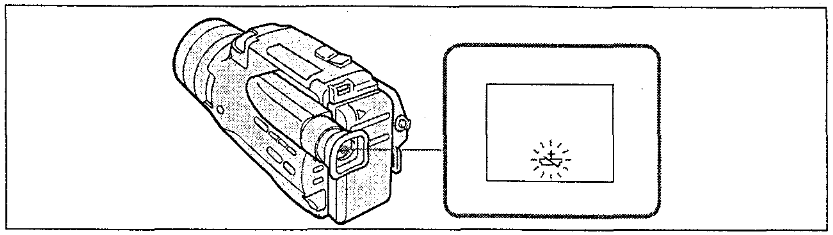
Changing the Lithium Battery

Your camcorder is supplied with a lithium battery installed. The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the ☼ indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**

Información adicional

Cambio de la pila de litio

Su videocámara es suministrada con una pila de litio instalada. La pila de litio para la videocámara dura 1 año aproximadamente operando la cámara de forma normal. Cuando la pila se debilite o se descargue, el indicador ☼ parpadeará en el visor durante unos 5 segundos cuando ponga el conmutador POWER en CAMERA. En este caso, **cambie la pila por una pila de litio Sony CR2025. El empleo de cualquier otra pila tal vez presente un riesgo de incendio o explosión.**

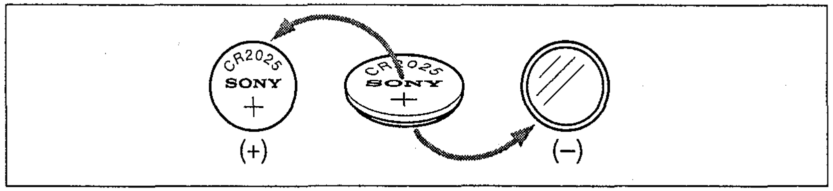


Note on Lithium Battery

The lithium battery has a positive (+) side and a negative (–) side as illustrated. Be sure to insert the lithium battery with the positive side facing out.

Nota sobre la pila de litio

La pila de litio tiene un lado positivo (+) y un lado negativo (–), como se muestra en la ilustración. Asegúrese de instalar la pila de litio con el lado positivo hacia afuera.



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution

Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

AVISO

La pila de litio puede explotar si no se trata adecuadamente. No la cargue, desmonte ni la tire al fuego.

Precaución

Mantenga la pila de litio donde no la puedan alcanzar los niños. Si alguien la traga, consulte inmediatamente a un médico.

Changing the Lithium Battery

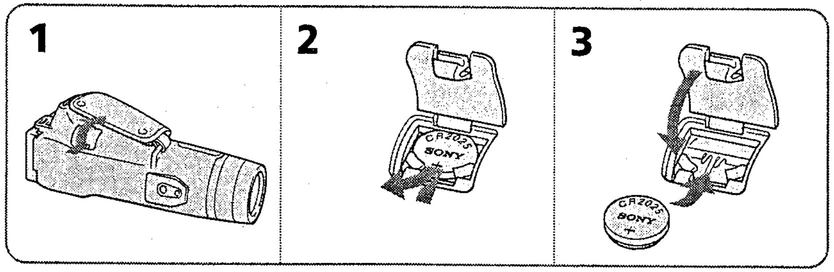
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time, age and other BACK UP items in the menu system.

(1) Open the lid of lithium battery compartment under the grip strap of the camcorder.
(2) Push the battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.

Cambio de la pila de litio

Cuando cambie la pila de litio, mantenga la batería u otra fuente de alimentación conectada. De lo contrario, tendrá que volver a poner la fecha, la hora, la edad y otros ítemes BACK UP del sistema de menú.

(1) Abra la tapa del compartimiento de la pila de litio situada debajo de la correa de la empuñadura de la videocámara.
(2) Empuje la pila hacia abajo una vez y sáquela del portapila.
(3) Instale la pila de litio con el lado positivo (+) hacia afuera. Cierre la tapa.


1
2
3
CR2025
SONY
+

Resetting the Date or Time

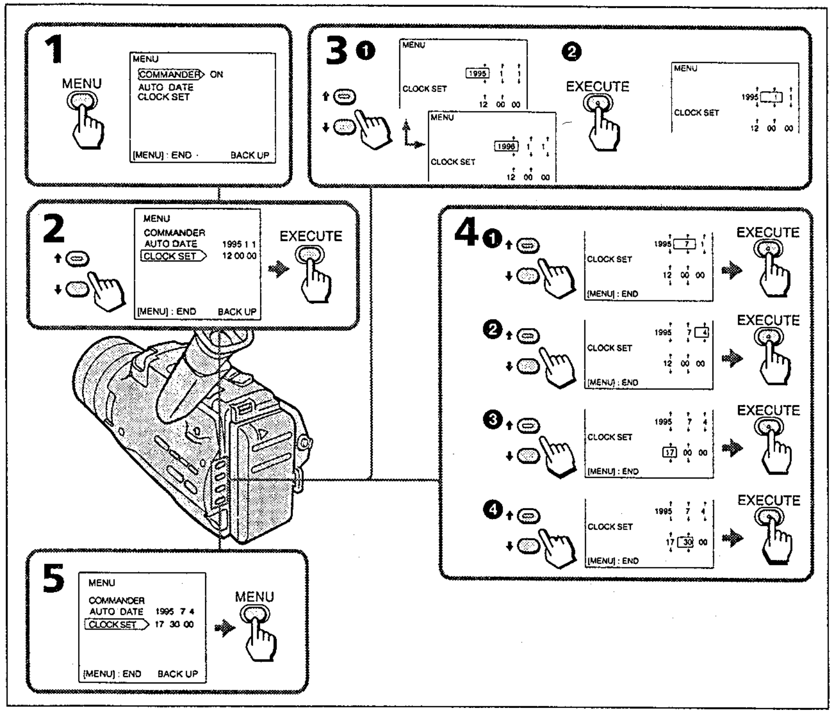
You can reset the date or time in the menu system.

(1) Press MENU to display the menu in the viewfinder.
(2) Select CLOCK SET, then press EXECUTE.
(3) Press ♦ or ♦ to adjust the year, and then press EXECUTE.
(4) Press ♦ or ♦ to adjust the month, day, hour and minutes, and then press EXECUTE. Note that when you keep ♦ or ♦ pressed, the indications in the menu display advance faster.
(5) Press MENU to erase the menu display.

Reposición de la fecha o la hora

Podrá reponer la fecha o la hora en el sistema de menú.

(1) Presione MENU para visualizar el menú en el visor.
(2) Seleccione CLOCK SET y luego presione EXECUTE.
(3) Presione ♦ o ♦ para ajustar el año y luego presione EXECUTE.
(4) Presione ♦ o ♦ para ajustar el mes, el día del mes, la hora y los minutos y luego presione EXECUTE. Tenga en cuenta que cuando mantenga presionado ♦ o ♦, las indicaciones del menú avanzarán más rápidamente.
(5) Presione MENU para cancelar la visualización del menú.


1
MENU
MENU
COMMANDER ON
AUTO DATE
CLOCK SET
[MENU] : END BACK UP
3 ❶
MENU
CLOCK SET
1995
12 00 00
1996
❷
EXECUTE
2
MENU
COMMANDER
AUTO DATE 1995 1 1
CLOCK SET 12 00 00
[MENU] : END BACK UP
EXECUTE
4 ❶
CLOCK SET
1995 7 1
12 00 00
[MENU] : END
EXECUTE
❷
1995 7 4
❸
17 00 00
❹
17 30 00
5
MENU
COMMANDER
AUTO DATE 1995 7 4
CLOCK SET 17 30 00
[MENU] : END BACK UP
MENU

To Check the Preset Date and Time

Press DATE (+) to display the date indicator in the viewfinder.
Press TIME (NEXT) to display the time indicator. When you press the same button again, the indicator goes off.
When you set the year, each time you press DATE (+) the digits change as follows.

1995 → 1996 → ---- → 2024

Para comprobar la fecha y la hora preajustadas

Presione DATE (+) para visualizar el indicador de la fecha en el visor.
Presione TIME (NEXT) para visualizar el indicador de la hora. Cuando presione otra vez el mismo botón, el indicador desaparecerá.
Cuando ajuste el año, cada vez que presione DATE (+) los dígitos cambiarán de la forma siguiente:

1995 → 1996 → ---- → 2024

Playback Modes

Modos de reproducción

The playback mode (SP or LP) is selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

LP (long play) mode

When you play back a tape recorded in LP mode, the LP indicator lights up in the viewfinder. This camcorder cannot record a tape in LP mode.

Foreign 8 mm video

You cannot play back software recorded on a different TV colour system. Because the TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 55 to check the TV colour system of foreign countries.

El modo de reproducción (SP o LP) se seleccionará automáticamente según el formato en el que se haya grabado la cinta. Sin embargo, la calidad de la imagen grabada en el modo LP no será tan buena como la del modo SP.

Modo LP (larga duración)

Cuando reproduzca una cinta grabada en el modo LP, el indicador LP se encenderá en el visor. Esta videocámara no puede grabar una cinta en el modo LP.

Vídeo de 8 mm del extranjero

No podrá reproducir programas grabados con un sistema de televisión en color diferente. Debido a que los sistemas de televisión en color cambian según los países, quizá no pueda reproducir programas grabados en el extranjero. Consulte la página 55 para comprobar cuáles son los sistemas de televisión en color de otros países del extranjero.

Tips for Using the Battery Pack

Consejos para emplear la batería

This section shows you how you can get the most out of your battery pack.

Esta sección le muestra cómo obtener el máximo rendimiento de su batería.

Preparing the Battery Pack

Always Carry Additional Batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery Life is Shorter in a Cold Environment

Battery efficiency is decreased and the battery will be used up more quickly if you are recording in a cold environment.

To Save Battery Power

Turn STANDBY on the camcorder down when not recording to save battery power (p. 49) **[a]**.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

Preparación de la batería

Lleve siempre baterías de repuesto

Prepare suficientes baterías para poder alimentar la videocámara 2 ó 3 veces más del tiempo de grabación planeado.

La duración de la batería se acorta con el frío

La eficiencia de la batería disminuirá, y se descargará con mayor rapidez, si graba donde haga frío.

Para ahorrar energía de la batería

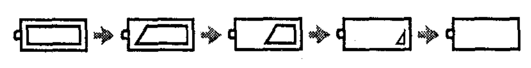
Gire STANDBY de la videocámara hacia abajo cuando no grabe para ahorrar energía de la batería (página 49) **[a]**.
Se podrá hacer una transición uniforme entre escenas aunque se pare la grabación y se vuelva a comenzar. Mientras se encuentre posicionando el motivo, seleccionando un ángulo o mirando a través del visor, el objetivo se moverá automáticamente y la batería se irá descargando. La batería se utilizará también cuando introduzca o retire una cinta.

When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator in the viewfinder decreases gradually as battery power is used up.

Cuándo cambiar la batería

Mientras emplea la videocámara, el indicador del visor, que muestra la carga restante en la batería, disminuirá gradualmente a medida que la batería se vaya descargando.



When the remaining battery indicator reaches the lowest point, the ▭ indicator appears and starts flashing in the viewfinder (p. 49) **[b]**.
When the ▭ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack is replaced.

Cuando el indicador de carga restante en la batería alcance el punto más bajo, el indicador ▭ aparecerá en el visor y empezará a parpadear (página 49) **[b]**.
Cuando el indicador ▭ del visor cambie de parpadeo lento a rápido mientras graba, deslice el conmutador POWER de la videocámara hasta OFF y cambie la batería. Deje la cinta en la videocámara para conseguir una transición uniforme entre escenas después de haber cambiado la batería.

Note on the remaining battery indicator
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with its own indicator (not supplied). The indicator on the battery pack is more accurate.

Notes on the Rechargeable Battery Pack

The Battery Pack Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Pack Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery pack. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself) (p. 49) **[c]**.

The Life of the Battery Pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature

You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Nota sobre le indicador de carga restante en la batería
El indicador de carga restante en la batería de la videocámara podrá indicar una capacidad restante diferente de la indicada por el indicador de la propia batería (no suministrada). El indicador de la batería es más preciso.

Notas sobre la batería recargable

La batería se calienta

Durante la carga o la grabación, la batería se calienta. Esto se debe a la energía que se genera y al cambio químico que se produce en el interior de la batería. Esto no es motivo de preocupación.

Cuidados para la batería

- Retire la batería de la videocámara después de utilizarla y guárdela en un lugar fresco. Cuando la batería esté instalada en la videocámara, fluirá una pequeña cantidad de corriente a la videocámara aun cuando el conmutador POWER se encuentre en OFF, lo cual reducirá la carga de la batería.
- La batería se descargará continuamente incluso cuando no se esté utilizando después de haberla cargado. Por lo tanto, deberá cargarla justo antes de utilizar la videocámara.

Cómo utilizar el conmutador de la batería

Este conmutador está provisto para que usted pueda marcar la batería cargada. Póngalo en la posición "sin marca" cuando termine de cargarla. Póngalo en la posición "marca roja" cuando la batería esté descargada (o póngalo en la posición que mejor le recuerde el estado de la batería) (página 49) **[c]**.

Duración de la vida útil de la batería

Si el indicador de la batería parpadea rápidamente justo después de encender la videocámara con una batería completamente cargada, la batería deberá ser sustituida por otra nueva completamente cargada.

Temperatura de carga

Deberá cargar las baterías a temperaturas comprendidas entre 10°C y 30°C. A temperaturas más bajas se requerirá más tiempo de carga.

Tips for Using the Battery Pack

Notes on Charging

A Brand-new Battery Pack

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack

- Make sure to use up the battery before recharging.
- If recording is completed before the ▭ indicator appears in the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor, you can use the discharging function.
- **Charging a usable battery pack causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery pack again.**

After Long Storage

Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Consejos para emplear la batería

Notas sobre la carga

Una batería nueva

Una batería nueva no estará cargada. Antes de utilizarla, cárguela completamente.

Antes de cargar una batería usada

- Asegúrese de usar completamente la batería antes de cargarla.
- Si finaliza la grabación antes de que el indicador ▭ aparezca en el visor, deberá retirar la cinta, deslizar el conmutador POWER hasta CAMERA, girar STANDBY hacia arriba y dejar la videocámara hasta que el indicador de la batería parpadee rápidamente.
- Cuando utilice el adaptador de alimentación AC-S10, podrá usar la función de descarga.
- **La carga de una batería que no esté completamente descargada causará una disminución en su capacidad de carga. La capacidad original de la batería podrá recuperarse si la emplea hasta agotarla y luego la vuelve a cargar de nuevo completamente.**

Después de haber guardado la batería durante mucho tiempo

Cargue la batería después de haberla guardado durante mucho tiempo. Si la batería está completamente cargada pero no se utiliza durante mucho tiempo (1 año aproximadamente), ésta se descargará. Cárguela de nuevo, pero en este caso, la duración de la carga será inferior a la normal.
Después de cargarla y descargarla varias veces, la batería recuperará su capacidad original.

Notes on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened.
When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Be Sure to Observe the Following

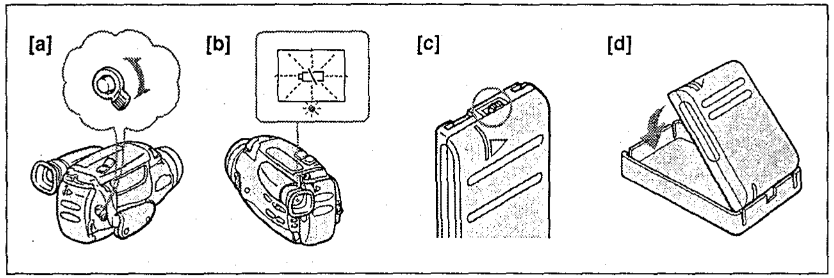
- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. When carrying the battery pack, attach the terminal cover [d].**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Notas sobre los terminales

Si los terminales (las partes metálicas del lado posterior) no están limpios, la duración de la batería se acortará.
Cuando los terminales no estén limpios o cuando la batería no se haya utilizado durante mucho tiempo, instale y retire la batería repetidamente. Esto mejorará el contacto. Además, limpie los terminales + y – con un papel o paño suave.

No se olvide de observar los puntos siguientes

- **Para evitar un accidente causado por un cortocircuito, no permita que objetos metálicos tales como collares toquen los terminales de la batería. Cuando lleve la batería encima, coloque la tapa de los terminales [d].**
- Mantenga la batería alejada del fuego.
- Mantenga seca la batería.
- No abra ni modifique la batería.
- No exponga la batería a ningún golpe mecánico.



Maintenance Information and Precautions

Información de mantenimiento y precauciones

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

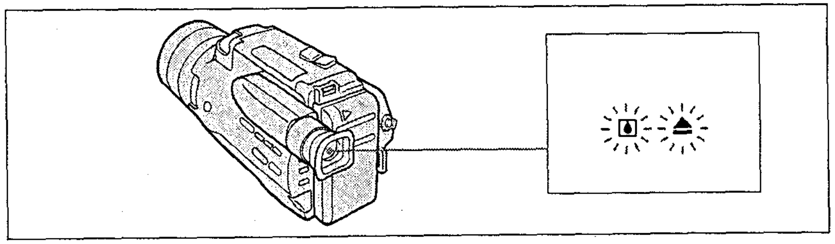
When the ▣ and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

Condensación de humedad

Si traslada la videocámara directamente de un lugar frío a otro cálido, es posible que se condense humedad en su interior, en la superficie de la cinta o en el objetivo. En estas condiciones, la cinta podrá adherirse al tambor de las cabezas y dañarse, o la videocámara podría no funcionar correctamente. Para evitar posibles daños en estas circunstancias, la videocámara dispone de sensores de humedad.
Sin embargo, tome las precauciones siguientes.

En el interior de la videocámara

Cuando los indicadores ▣ y ⏏ parpadeen en el visor, se habrá condensado humedad en la videocámara. Si de diera el caso, no funcionará ninguna otra función excepto la expulsión de la cinta.
Expulse la cinta, desconecte la alimentación de la videocámara y déjela con el portacasete abierto durante una hora como mínimo. La videocámara podrá volver a utilizarse si el indicador ▣ no aparece cuando se vuelva a conectar la alimentación.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert the cassette and press a tape transport button (► PLAY, etc.), the ⏏ indicator in the viewfinder flashes.
In this case, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour. The camcorder can be used again if the ⏏ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

En la superficie de la cinta

Si hay humedad en la superficie de la cinta, cuando introduzca la videocasete y pulse un botón de transporte de la cinta (► PLAY, etc.), el indicador ⏏ del visor parpadeará.
En este caso, no funcionará ninguna otra función excepto la expulsión de la cinta.
Expulse la cinta, desconecte la alimentación de la videocámara y déjela con el portacasete abierto durante una hora como mínimo. La videocámara podrá volver a utilizarse si el indicador ⏏ no aparece cuando introduzca el casete y presione uno de los botones de transporte de la cinta.

On the Lens
If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about one hour.

How to Prevent Moisture Condensation
When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

En el objetivo
Si se condensa humedad en el objetivo, no aparecerá ningún indicador, pero la imagen perderá intensidad. Desconecte la alimentación y no utilice la videocámara durante una hora aproximadamente.

Cómo prevenir la condensación de humedad
Cuando pase la videocámara de un lugar frío a otro cálido, meta la videocámara en una bolsa de plástico y deje que se adapte a las condiciones de la sala durante un período de tiempo.

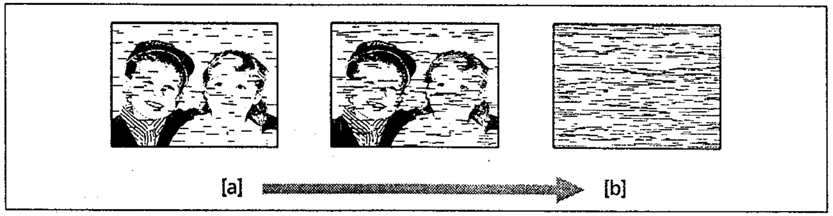
(1) Asegúrese de cerrar firmemente la bolsa de plástico con la videocámara dentro.
(2) Sáquela de la bolsa cuando la temperatura del aire en el interior de la bolsa haya alcanzado la temperatura alrededor de ella (después de una hora aproximadamente).

Video Head Cleaning

To ensure normal recording and clear pictures, clean the video heads often. When the ⊗ indicator in the viewfinder flashes or playback pictures are "noisy" or hardly visible, the video heads may be dirty.

Limpieza de las cabezas de vídeo

Para asegurar una grabación normal y unas imágenes claras, limpie las cabezas de vídeo a menudo. Cuando el indicador ⊗ en el visor parpadee o cuando las imágenes reproducidas tengan "ruido" o apenas se puedan ver, las cabezas de vídeo quizá estén sucias.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

[a] Cabezas un poco sucias
[b] Cabezas muy sucias

Si se da el caso, limpie las cabezas con el limpiador de cabezas Sony V8-25CLH (no suministrado). Después de comprobar la imagen, si aún sigue teniendo "ruido," repita la limpieza. (No repita la limpieza más de 5 veces.)

Precaución
No utilice un videocasete de limpieza tipo húmedo de venta en el comercio. Podría dañar las cabezas.

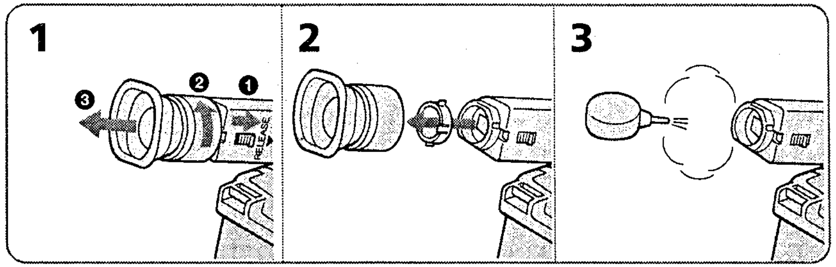
Nota
Si no puede adquirir en su zona el videocasete de limpieza V8-25CLH, consulte a su concesionario Sony más cercano.

Removing Dust from Inside the Viewfinder

(1) While holding down the switch on the viewfinder barrel, turn the eyecup in the direction of the arrow and pull it out.
(2) Remove the small lens from inside the viewfinder.
(3) Clean the surface with a commercially available blower.

Extracción del polvo del interior del visor

(1) Mientras presiona el conmutador del cuerpo del visor, gire el ocular en la dirección de la flecha y sáquelo.
(2) Retire la pequeña lente del interior del visor.
(3) Limpie la superficie con un soplador de aire que podrá adquirir en el comercio.

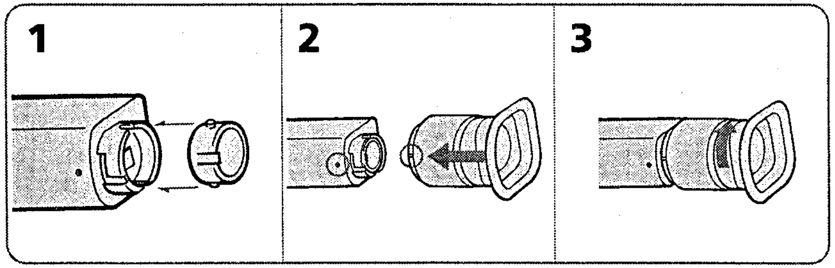


To Reattach the Eyecup

(1) Replace the small lens inside the viewfinder. Be sure to replace it with the correct side.
(2) Align the groove on the eyecup with the ● mark on the barrel.
(3) Turn the eyecup clockwise.

Para volver a colocar el ocular

(1) Vuelva a colocar la pequeña lente en el interior del visor. Asegúrese de colocarla por el lado correcto.
(2) Alinee la ranura del ocular con la marca ● del cuerpo del visor.
(3) Gire el ocular hacia la derecha.



Precautions

Camcorder Operation

- Operate the camcorder on 6.0 V (battery pack) or 7.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On Handling Tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape, if the tab is out or in, etc.

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

See the next page for further information.

Precauciones

Operación de la videocámara

- Utilice la videocámara con 6,0 V (batería) o 7,5 V (adaptador de alimentación de CA).
- Para operarla con CC o CA, utilice los accesorios recomendados en este manual.
- Si cayera algún objeto sólido o líquido en el interior de la videocámara, desenchúfela y pida a su concesionario Sony que se la revise antes de volver a utilizarla.
- Evite manejarla con rudeza o los golpes mecánicos. Tenga cuidado especial con el objetivo.
- Mantenga el conmutador POWER en OFF cuando no utilice la videocámara.
- No utilice la videocámara envuelta porque se calentará.
- Mantenga la videocámara alejada de los campos magnéticos fuertes o vibraciones mecánicas.

Manejo de las cintas

No introduzca nada en los pequeños agujeros de la parte posterior del videocasete. Estos agujeros son usados para detectar el tipo y grosor de la cinta, o si la lengüeta está hacia afuera o hacia dentro, etc.

Cuidados para la videocámara

- Cuando la videocámara no se vaya a utilizar durante mucho tiempo, desconecte la fuente de alimentación y retire la cinta. Periódicamente, conecte la alimentación, utilice las secciones de la camara y del reproductor y reproduzca una cinta durante unos 3 minutos.
- Limpie el objetivo con un cepillo suave para quitar el polvo. Si tiene huellas dactilares, quítelas con un paño suave.
- Limpie el cuerpo de la videocámara con un paños suave y seco, o con un paño suave ligeramente humedecido en una solución de detergente suave. No utilice ningún tipo de disolvente que pueda estropear el acabado.

Vea la página siguiente para más información.

AC Power Adaptor

Charging

- **Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.**
- Charge the battery pack on a flat surface without vibration.
- The battery pack will get hot during charging. This is normal.

Others

- Unplug the unit from mains when not in use for a long time. To disconnect the mains lead, pull it out by the plug. Never pull the mains lead itself.
- Do not operate the unit with a damaged mains lead or if the unit has been dropped or damaged.
- Do not bend the mains lead forcibly, or put a heavy object on it. This will damage the mains lead and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

The warranty that comes with your camcorder does not cover replacement or repair of parts or damage due to use of Ni-MH batteries.

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Adaptador de alimentación de CA

Carga

- **La carga de una batería que no esté completamente descargada causará una disminución en su capacidad de carga. Sin embargo, la capacidad original de la batería podrá recuperarse si la emplea hasta agotarla y luego la vuelve a cargar de nuevo completamente.**
- Cargue la batería sobre una superficie plana y sin vibraciones.
- La batería se calentará durante la carga. Esto es normal.

Otras precauciones

- Desenchufe la unidad de la toma de corriente de la pared cuando no la vaya a utilizar durante mucho tiempo. Para desenchufar el cable de alimentación, tire de la clavija. Nunca tire del propio cable.
- No utilice la unidad con el cable de alimentación dañado, o si se ha caído o dañado.
- No doble a la fuerza el cable de alimentación ni ponga un objeto pesado sobre él. Esto dañará el cable y podría causar un incendio o una sacudida eléctrica.
- Asegúrese de que nada metálico entre en contacto con las partes metálicas de la placa de conexión. Si así ocurriera, podría producirse un cortocircuito y dañarse la unidad.
- Mantenga siempre limpios los contactos metálicos.
- No desmonte la unidad.
- Evite los golpes mecánicos y no deje caer la unidad.
- Mientras utiliza la unidad, particularmente durante la carga, manténgala alejada de receptores de AM y equipos de vídeo porque perturbará la recepción de AM y el funcionamiento del equipo de vídeo.
- La unidad se calentará mientras se utilice. Esto es normal.
- No ponga la unidad en los lugares siguientes:
  - Muy calientes o fríos
  - Polvorientos o sucios
  - Muy húmedos
  - Con vibraciones

La garantía que se entrega con su videocámara no cubre el recambio o la reparación de las piezas o daños debidos al uso de las baterías Ni-MH.

Si se presenta alguna dificultad, desenchufe la unidad y póngase en contacto con su concesionario Sony más cercano.

Using Your Camcorder Abroad

Each country has its own electric and TV colour systems. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Difference in Colour Systems

This camcorder is a PAL system based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV or a SECAM system based TV with a PAL/SECAM transcoder.
Check the following list.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system countries
Bulgaria, Czech Republic, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Empleo de su videocámara en el extranjero

Cada país tiene sus propios sistemas eléctrico y de televisión en color. Antes de utilizar su videocámara en el extranjero, compruebe los puntos siguientes.

Fuentes de alimentación

Podrá utilizar su videocámara en cualquier país con el adaptador de alimentación de CA suministrado, dentro del margen de 110 a 240 V, 50/60 Hz.

Diferencias en los sistemas de TV en color

Esta videocámara está basada en el sistema PAL. Si desea ver la imagen reproducida en un televisor, éste deberá ser un televisor basado en el sistema PAL o un televisor basado en el sistema SECAM con transcodificador PAL/SECAM.
Compruebe la lista siguiente.

Países con sistema PAL
Alemania, Australia, Austria, Bélgica, China, Dinamarca, España, Finlandia, Gran Bretaña, Holanda, Hong Kong, Italia, Kuwait, Malaysia, Noruega, Nueva Zelanda, Portugal, Singapur, Suecia, Suiza, Tailandia, etc.

País con el sistema PAL-M
Brasil

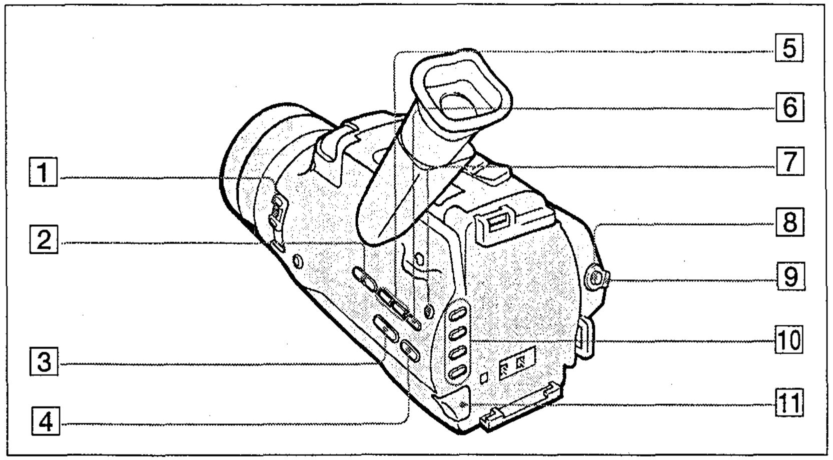
Países con el sistema PAL-N
Argentina, Paraguay, Uruguay

Países con el sistema NTSC
Bolivia Canadá, Centroamérica, Canadá, Colombia, Corea, Chile, Ecuador, EE.UU., Filipinas, Islas Bahamas, Jamaica, Japón, México, Perú, Surinám, Taiwan, Venezuela, etc.

Países con el sistema SECAM
Bulgaria, República de Checoslovaquia, Francia, Guyana, Hungría, Irán, Irak, Mónaco, Polonia, Rusia, República de Eslovaquia, Ucrania, etc.

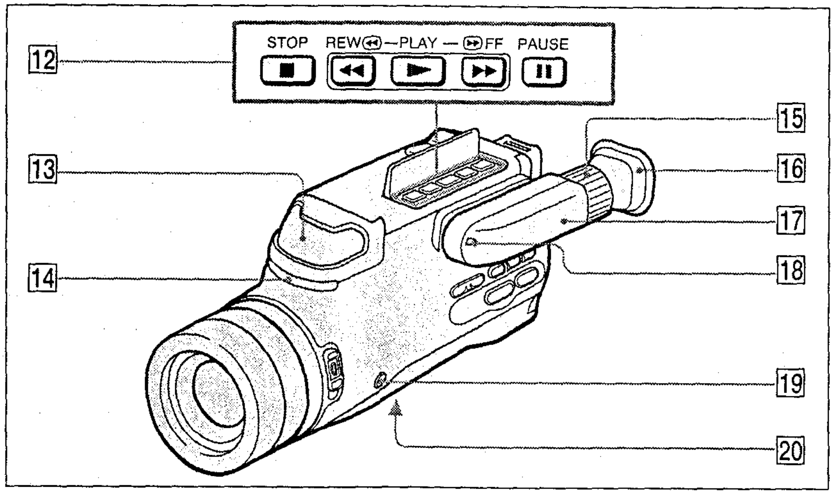
Identifying the Parts

Identificación de las partes



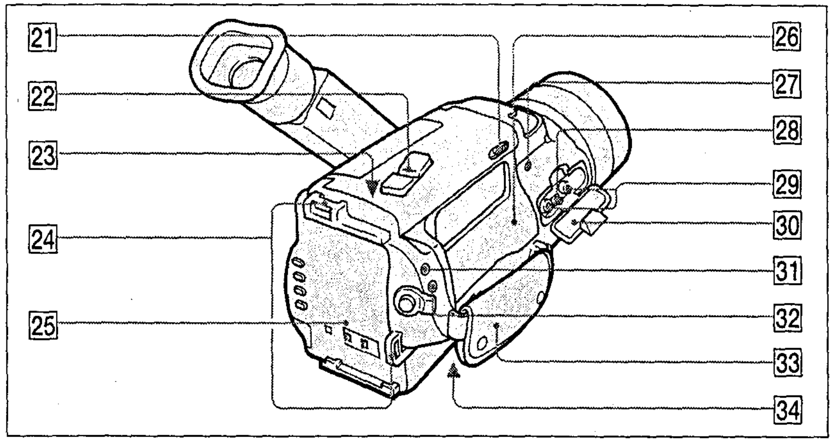
1. **POWER switch** (p. 14, 24)
2. **EDITSEARCH button** (p. 20)
3. **PROGRAM AE button** (p. 35)
4. **BACK LIGHT button** (p. 33)
5. **DATE (+) and TIME (NEXT) buttons** (p. 29)
6. **AGE/EVENT button** (p. 30)
7. **COUNTER RESET button** (p. 15)
8. **START/STOP button** (p. 14, 15)
9. **STANDBY switch** (p. 14)
10. **Menu operation buttons** (p. 38)
11. **BATT (battery eject) knob** (p. 11)

1. **Conmutador de alimentación (POWER)** (páginas 14, 24)
2. **Botón de búsqueda para edición y revisión de la grabación (EDITSEARCH)** (página 20)
3. **Botón de exposición automática programada (PROGRAM AE)** (página 35)
4. **Botón de compensación de iluminación posterior (BACK LIGHT)** (página 33)
5. **Botones de la fecha (DATE (+)) y la hora (TIME (NEXT))** (página 29)
6. **Botón de edad/acontecimiento (AGE/EVENT)** (página 30)
7. **Botón de reposición del contador (COUTER RESET)** (página 15)
8. **Botón de inicio/parada de grabación (START/STOP)** (páginas 14, 15)
9. **Conmutador de puesta en espera (STANDBY)** (página 14)
10. **Botones de operación del menú** (página 38)
11. **Perilla de expulsión de la batería (BATT)** (página 11)



- 12 **Tape transport buttons** (p. 24)
  - ■ STOP (stop)
  - ◀◀ REW (rewind)
  - ▶ PLAY (playback)
  - ▶▶ FF (fastforward)
  - II PAUSE (pause)
- 13 **Built-in microphone**
- 14 **Remote sensor** (p. 69)
  Aim the Remote Commander here for remote control.
- 15 **Viewfinder lens adjustment ring** (p. 13)
- 16 **Eyecup**
- 17 **Viewfinder** (p. 13)
- 18 **Camera recording/battery lamp**
- 19 **FADER button** (p. 36)
- 20 **Tripod receptacle** (p. 18)

- 12 **Botones del transporte de la cinta** (página 24)
  - ■ STOP (parada)
  - ◀◀ REW (rebobinado)
  - ▶ PLAY (reproducción)
  - ▶▶ FF (avance rápido)
  - II PAUSE (pausa)
- 13 **Micrófono incorporado**
- 14 **Sensor de señales del telemando** (página 69)
  Dirija el telemando hacia este sensor para realizar el control a distancia.
- 15 **Anillo de ajuste de la lente del visor** (página 13)
- 16 **Ocular**
- 17 **Visor** (página 13)
- 18 **Lámpara de grabación con la videocámara/batería**
- 19 **Botón de fundidos (FADER)** (página 36)
- 20 **Receptáculo para el trípode** (página 18)



- 21 **Lid lock** (p. 12)
- 22 **Power zoom button** (p. 17)
- 23 **Eject button (under the cover)** (p. 12)
- 24 **Hooks for shoulder strap** (p. 67)
- 25 **Battery mounting surface** (p. 11)
- 26 **Cassette compartment** (p. 12)
- 27 **MIC jack (PLUG IN POWER)**
  Connect an optional external microphone. This jack also accepts a "plug-in-power" microphone.
- 28 **RFU DC OUT (RFU adaptor DC output) jack** (p. 23)
- 29 **Audio/Video output jacks** (p. 22)
- 30 **Jack cover**
- 31 **LANC ⓛ control jack**
  ⓛ stands for Local Application Control Bus System. The ⓛ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.
- 32 **🎧 (Earphone) jack**
- 33 **Grip strap** (p. 18)
- 34 **Lithium battery compartment** (p. 43)

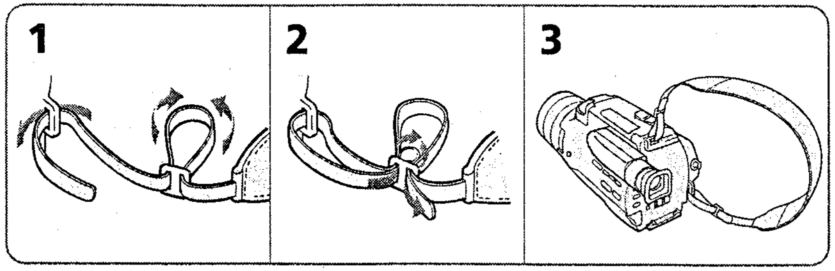
- 21 **Cierre de la tapa** (página 12)
- 22 **Botón de zoom motorizado** (página 17)
- 23 **Botón de expulsión (debajo de la tapa)** (página 12)
- 24 **Ojales para la bandolera** (página 67)
- 25 **Superficie de montaje de la batería** (página 11)
- 26 **Compartimiento del videocasete** (página 12)
- 27 **Toma de micrófono (MIC) (encendido automático al conectar) (PLUG IN POWER)**
  Conecte un micrófono externo opcional a esta toma. A esta toma también se puede conectar un micrófono de "encendido automático al conectar."
- 28 **Toma de salida de CC del adaptador de RFU (RFU DC OUT)** (página 23)
- 29 **Tomas de salida de audio/vídeo** (página 22)
- 30 **Tapa de tomas**
- 31 **Toma de control (LANC ⓛ)**
  ⓛ significa Sistema de Bus de Control de Aplicación Local. La toma de control ⓛ se emplea para controlar el movimiento de la cinta del equipo de vídeo y de los periféricos conectados a él. Esta toma tiene la misma función que la toma indicada como CONTROL L o REMOTE.
- 32 **🎧 Toma auricular**
- 33 **Correa de la empuñadura** (página 18)
- 34 **Compartimiento de la pila de litio** (página 43)

Attaching the Shoulder Strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (p. 66).

Colocación de la bandolera

Enganche la bandolera suministrada en los ojales para la misma (página 66).

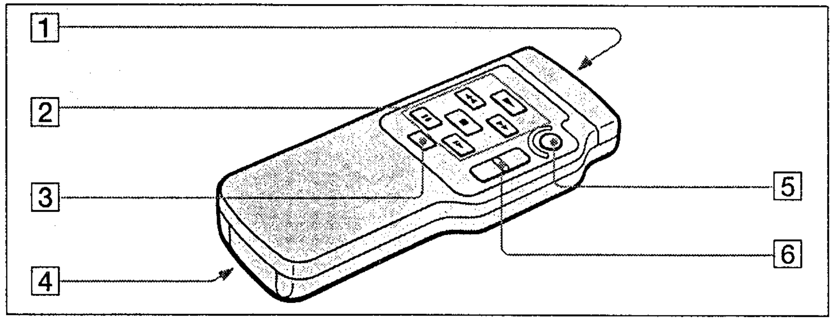


Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.

Telemando

Los botones que tienen el mismo nombre en el telemando y en la videocámara tienen también las mismas funciones.



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the POWER switch on the camcorder.

2 **Tape transport buttons** (p. 24, 25)

3 **DISPLAY button** (p. 25)

4 **R6 (Size AA) battery holder** (p. 68)

5 **START/STOP button** (p. 14)

6 **Power zoom button** (p. 17)
The zooming speed is unchangeable in the Remote Commander.

1 **Transmisor**
Diríjalo hacia el sensor de señales del telemando para controlar la videocámara después de conectar la alimentación con el conmutador POWER de la videocámara.

2 **Botones de movimiento de la cinta** (páginas 24, 25)

3 **Botón de visualización (DISPLAY)** (página 25)

4 **Compartimiento de las pilas R6 (tamaño AA)** (página 68)

5 **Botón de inicio/parada (START/STOP)** (página 14)

6 **Botón del zoom motorizado** (página 17)
La velocidad del zoom no cambiará empleando el telemando.

Preparing the Remote Commander

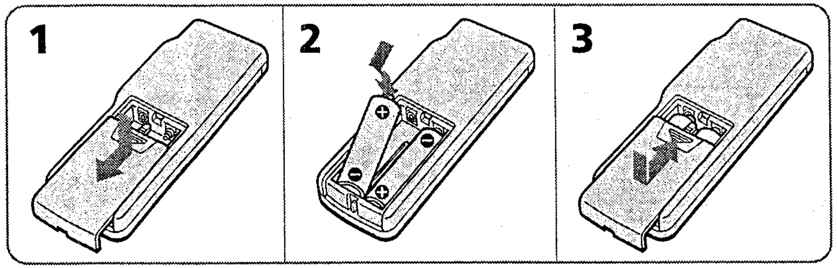
To use the Remote Commander, you must insert two R6 (size AA) batteries. Use the supplied R6 (size AA) batteries.

(1) Remove the battery cover from the Remote Commander.
(2) Insert both of the R6 (size AA) batteries with correct polarity.
(3) Put the battery cover back onto the Remote Commander.

Preparación del telemando

Para emplear el telemando, tendrá que insertar dos pilas R6 (tamaño AA). Emplee las pilas R6 (tamaño AA) suministradas.

(1) Extraiga la tapa de las pilas del telemando.
(2) Inserte ambas pilas R6 (tamaño AA) poniendo correctamente sus polaridades.
(3) Vuelva a poner la tapa de las pilas en el telemando.



Note on battery life

The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage

Remove the batteries when you will not use the Remote Commander for a long time.

Nota sobre la duración de las pilas

Las pilas del telemando durarán aproximadamente 6 meses bajo condiciones de funcionamiento normales. Cuando las pilas se debiliten o se descarguen, el telemando no funcionará.

Para evitar daños debidos a posibles fugas de las pilas

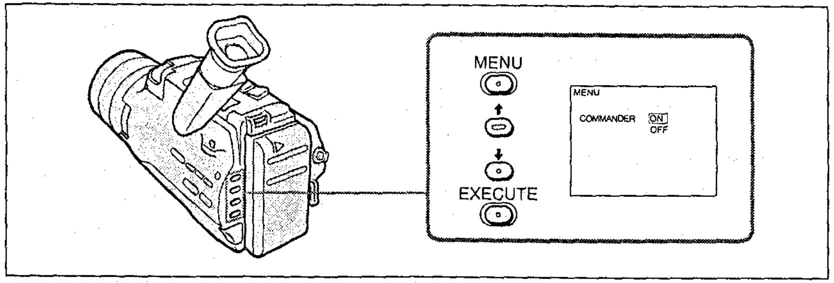
Quite las pilas cuando no piense emplear el telemando durante mucho tiempo.

Using the Remote Commander

Make sure that the COMMANDER mode is set to ON in the menu system.

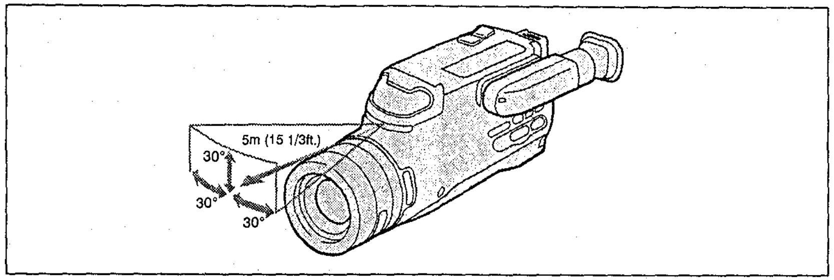
Empleo del telemando

Asegúrese de que el modo COMMANDER esté en ON en el sistema de menú.



Remote Control Direction

Dirección de control remoto



Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Notas sobre el telemando

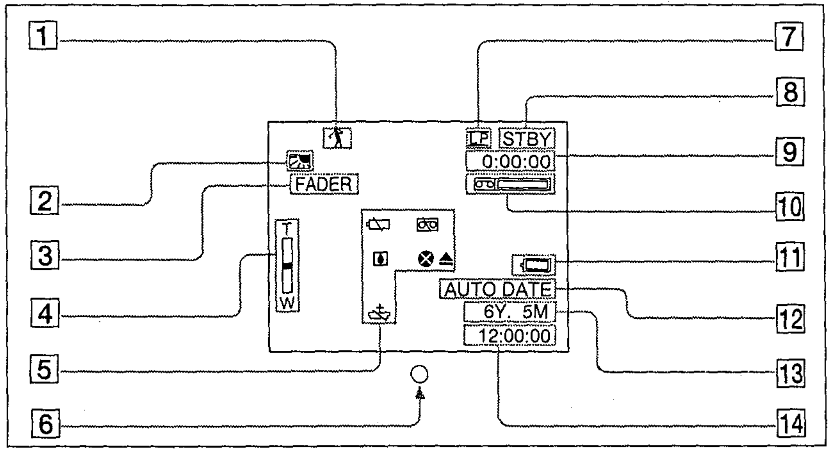
- Mantenga el sensor de señales del telemando alejado de fuentes de luz intensa tales como la iluminación o la luz solar directa. De otra forma, el telemando podrá fallar.
- Asegúrese de que no existan obstáculos entre el sensor de señales del telemando y el telemando.
- Esta videocámara funciona con el modo de telemando VTR 2. Los modos de telemando (1, 2 y 3) se emplean para distinguir esta videocámara de otras videograbadoras Sony y evitar así fallos en la operación de control remoto. Si emplea otra videograbadora Sony en el modo de telemando VTR 2, le recomendamos cambiar el modo de telemando o tapar el sensor de señales del telemando de la videograbadora con un papel negro.

Operation Indicators

For details on each indicator, refer to the pages indicated in the parentheses.

Indicadores de operación

Para detalles sobre cada uno de los indicadores, consulte las páginas entre paréntesis.



1. **PROGRAM AE indicator** (p. 35)
2. **Back Light indicator** (p. 33)
3. **FADER indicator** (p. 36)
4. **Power zoom indicator** (p. 17)
5. **Warning indicators** (p. 71)
6. **Recording lamp/Battery lamp** (p. 14)
7. **Lights up when playing back a tape recorded in LP mode.** (p. 45)
8. **Tape transport mode** (p. 14, 15)
9. **Tape counter** (p. 15)
10. **Remaining tape indicator** (p. 15)
    ▭ → ▭ → ▭ → 5min → 0min
11. **Remaining battery indicator** (p. 46)
    ▭ → ▭ → ▭ → ▭ → ▭
12. **AUTO DATE indicator** (p. 16)
13. **AGE/EVENT indicator** (p. 30)
14. **Date or Time** (p. 29)

1. **Indicador exposición automática programada (PROGRAM AE)** (página 35)
2. **Indicador de compensación de iluminación posterior** (página 33)
3. **Indicador de fundidos** (página 36)
4. **Indicador del zoom motorizado** (página 17)
5. **Indicadores de aviso** (página 71)
6. **Lámpara de grabación/batería** (página 14)
7. **Se enciende cuando se reproduce una cinta grabada en el modo LP.** (página 45)
8. **Modo transporte de la cinta** (páginas 14, 15)
9. **Contador de cinta** (página 15)
10. **Indicador de cinta restante** (página 15)
    ▭ → ▭ → ▭ → 5min → 0min
11. **Indicador de carga restante en la batería** (página 46)
    ▭ → ▭ → ▭ → ▭ → ▭
12. **Indicador AUTO DATE** (página 16)
13. **Indicador AGE/EVENT** (página 30)
14. **Fecha u hora** (página 29)

Indicators in the Viewfinder

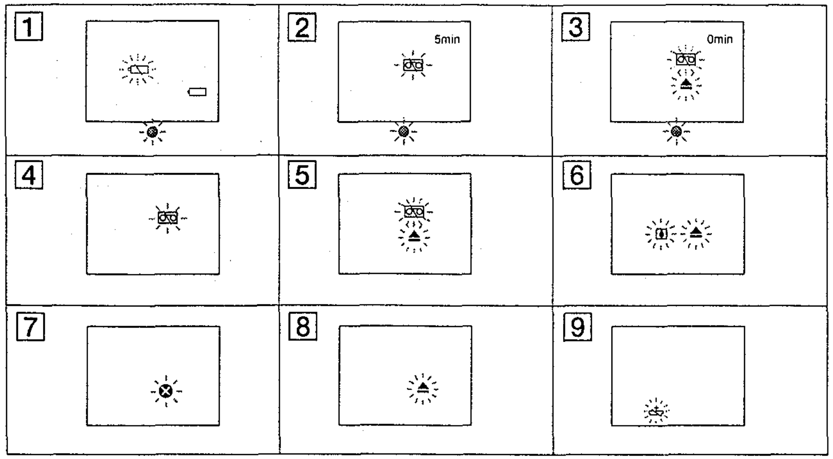
Warning Indicators

If indicators flash in the viewfinder or a caution lamp on the camcorder flashes, check the following:

Indicadores en el visor

Indicadores de aviso

Si parpadean los indicadores del visor o parpadea una lámpara de precaución en la videocámara, compruebe lo siguiente:



1 **The battery is weak or dead.** (p. 46)
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.** (p. 12)
The flashing becomes rapid.

4 **No tape has been inserted.** (p. 12)

5 **The tab on the tape is out (red).** (p. 12)

6 **Moisture condensation has occurred.** (p. 50)

7 **The video heads may be contaminated.** (p. 51)

8 **Some other trouble has occurred.**
Disconnect the power source and contact your Sony dealer or local authorized facility.

9 **The lithium battery is weak or is not installed.** (p. 42)

1 **La batería tiene poca carga o está completamente descargada.** (página 46)
Parpadeo lento: La batería tiene poca carga.
Parpadeo rápido: La batería está completamente descargada.

2 **La cinta se aproxima al final.**
El parpadeo es lento.

3 **La cinta se ha acabado.** (página 12)
El parpadeo se vuelve rápido.

4 **No se ha introducido cinta.** (página 12)

5 **La lengüeta de la cinta está afuera (se ve roja).** (página 12)

6 **Se ha producido condensación de humedad.** (página 50)

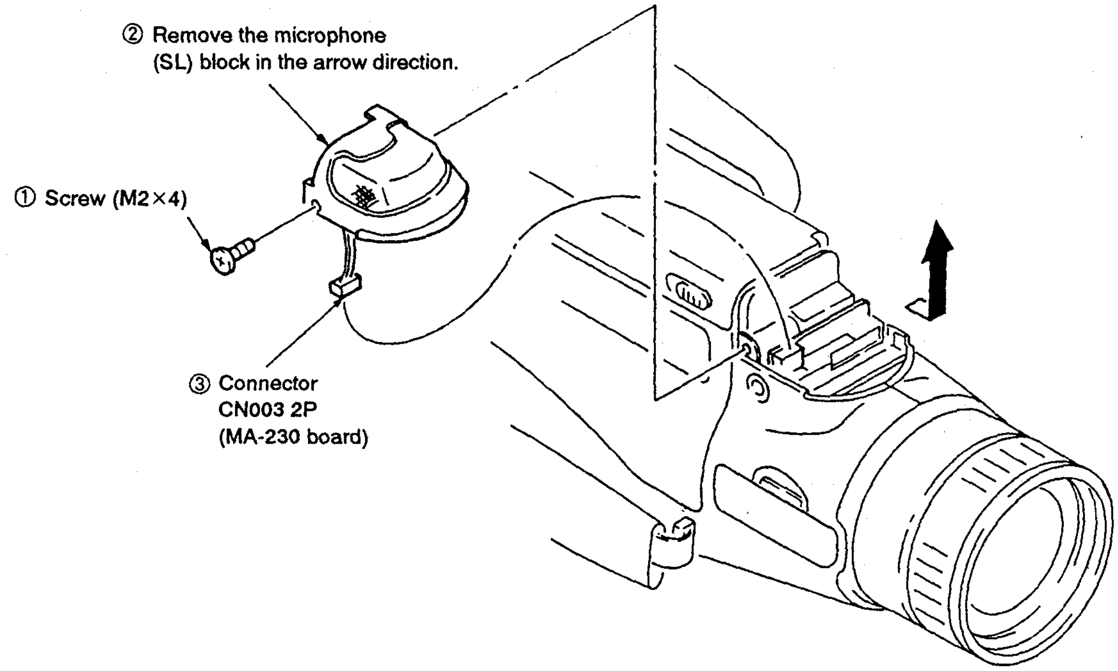
7 **Las cabezas de vídeo tal vez estén sucias.** (página 51)

8 **Se ha producido algún problema.**
Desconecte la fuente de alimentación y póngase en contacto con su concesionario Sony o con un centro de reparaciones local autorizado por Sony.

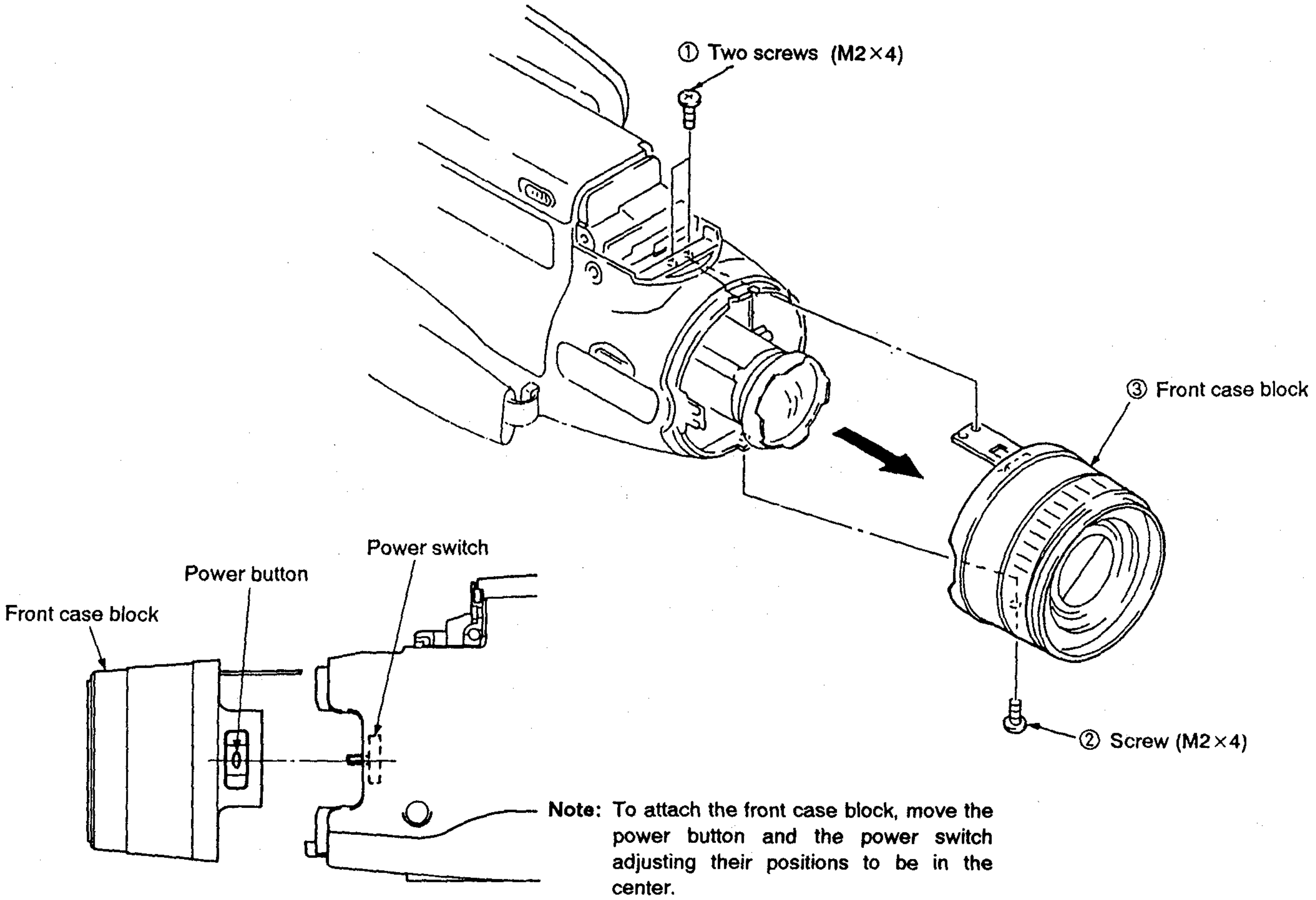
9 **La pila de litio tiene poca carga o no se ha instalado.** (página 42)

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF MICROPHONE (SL) BLOCK

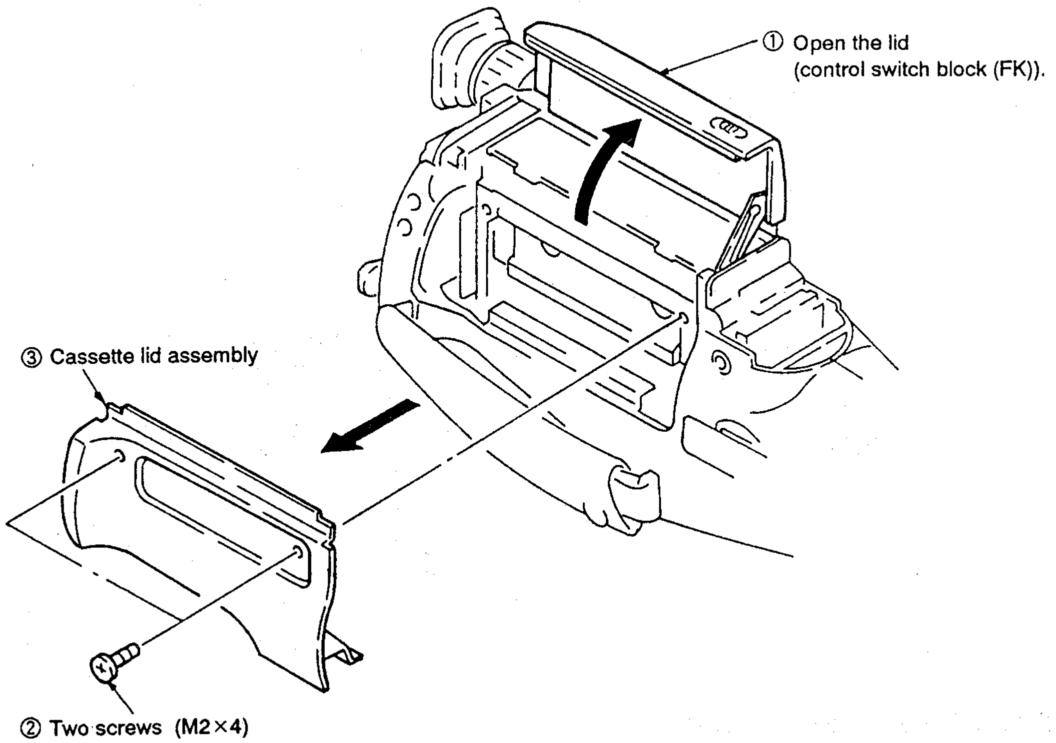

② Remove the microphone (SL) block in the arrow direction.
① Screw (M2×4)
③ Connector CN003 2P (MA-230 board)

2-2. REMOVAL OF FRONT CASE BLOCK


① Two screws (M2×4)
③ Front case block
② Screw (M2×4)
Power switch
Power button
Front case block

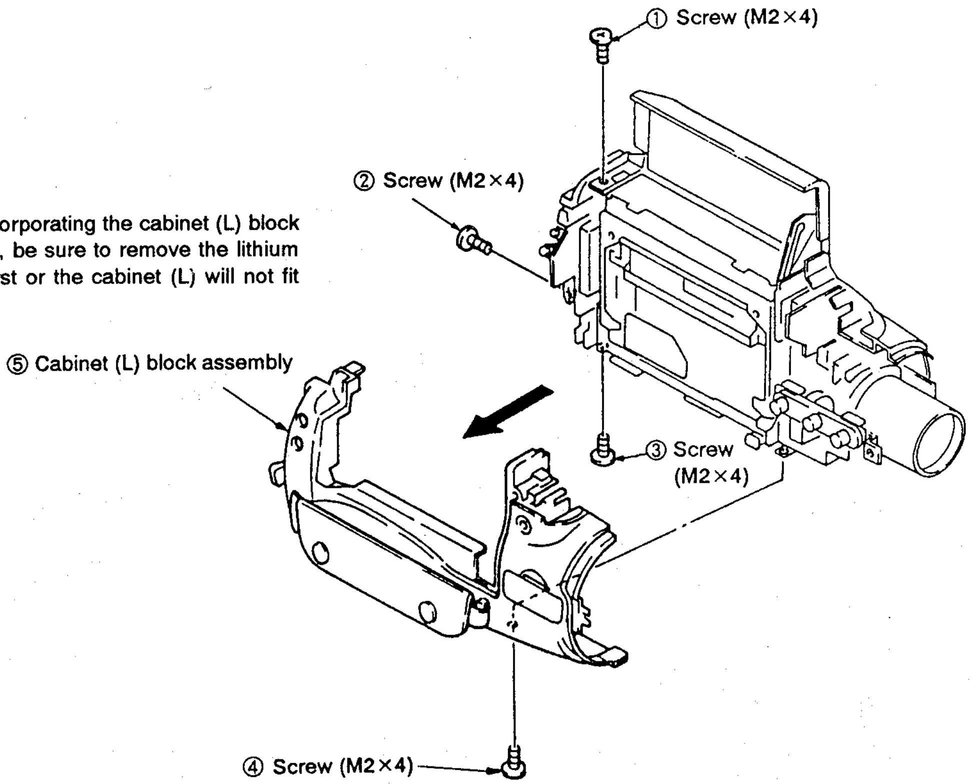
Note: To attach the front case block, move the power button and the power switch adjusting their positions to be in the center.

2-3. REMOVAL OF CASSETTE LID ASSEMBLY

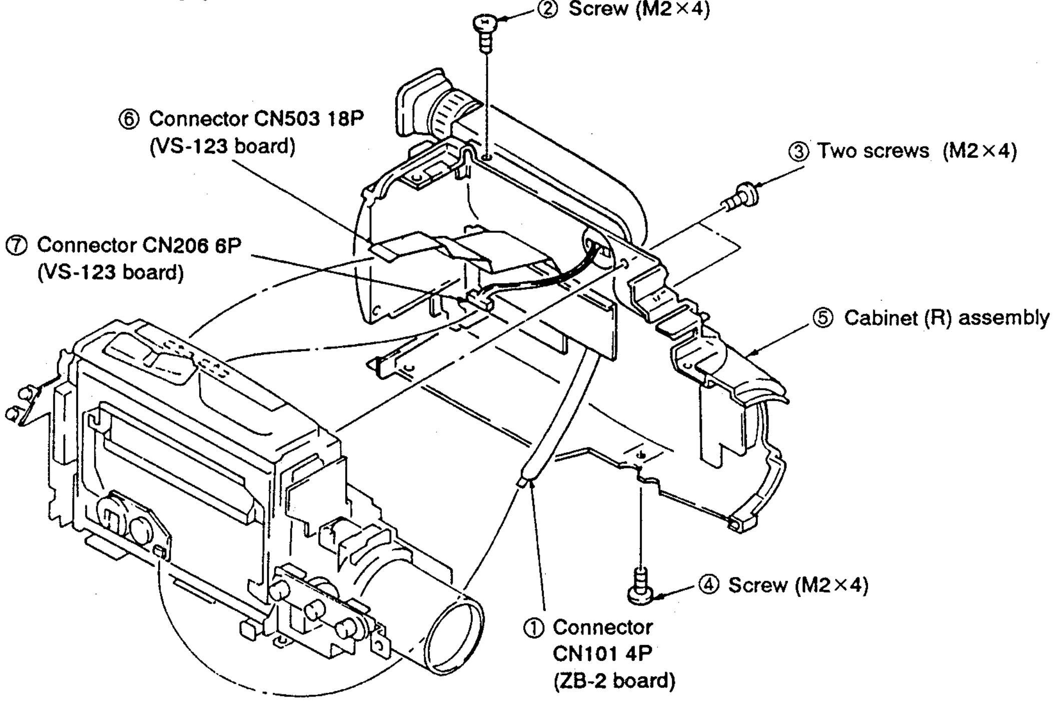

① Open the lid
(control switch block (FK)).
③ Cassette lid assembly
② Two screws (M2×4)

2-4. REMOVAL OF CABINET (L) BLOCK ASSEMBLY

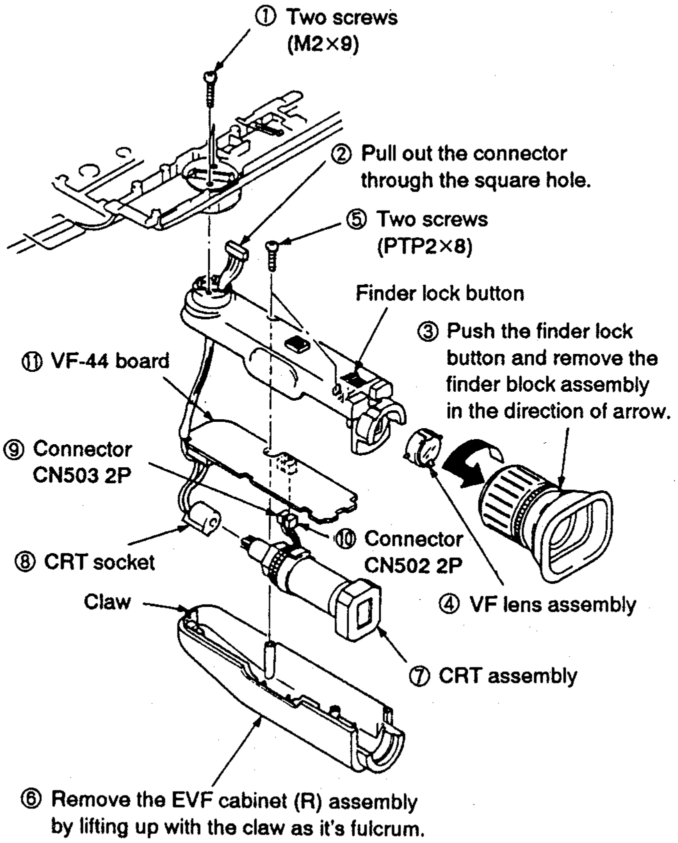
Note: When incorporating the cabinet (L) block assembly, be sure to remove the lithium battery first or the cabinet (L) will not fit properly.


① Screw (M2×4)
② Screw (M2×4)
⑤ Cabinet (L) block assembly
③ Screw
(M2×4)
④ Screw (M2×4)

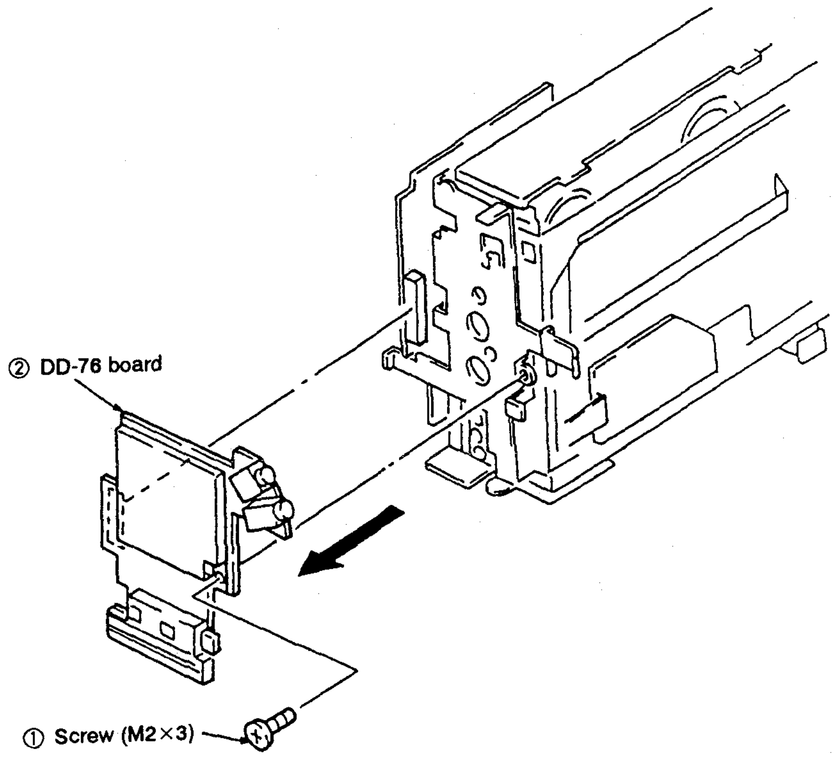
2-5. REMOVAL OF CABINET (R) ASSEMBLY


② Screw (M2×4)
⑥ Connector CN503 18P (VS-123 board)
③ Two screws (M2×4)
⑦ Connector CN206 6P (VS-123 board)
⑤ Cabinet (R) assembly
④ Screw (M2×4)
① Connector CN101 4P (ZB-2 board)

2-6. REMOVAL OF EVF ASSEMBLY (VF-44 BOARD)

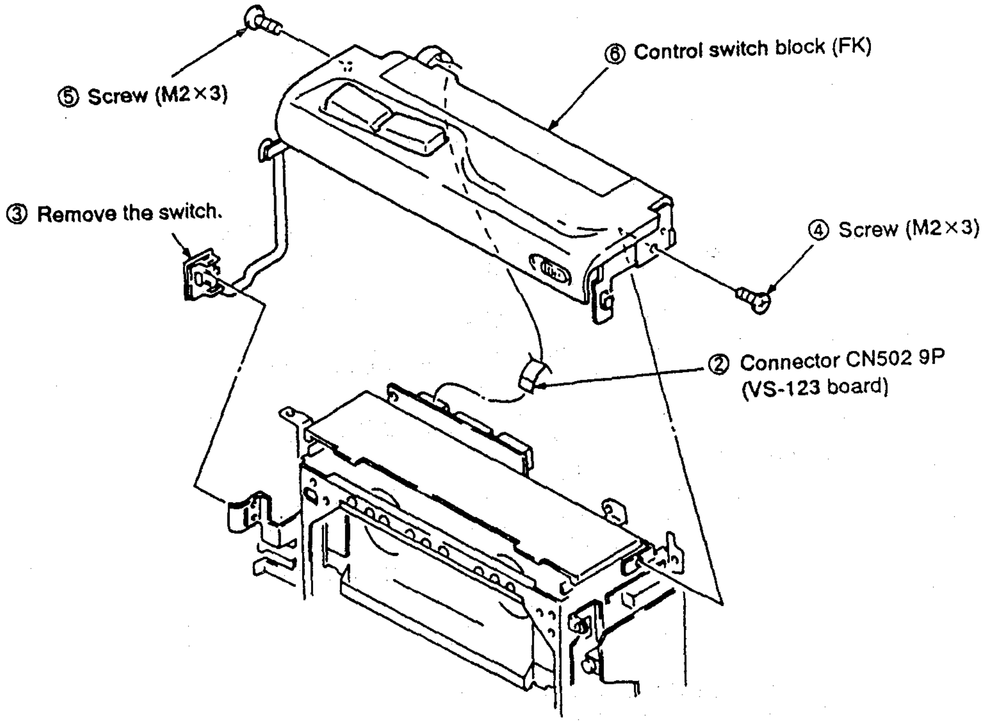

① Two screws (M2×9)
② Pull out the connector through the square hole.
⑤ Two screws (PTP2×8)
Finder lock button
③ Push the finder lock button and remove the finder block assembly in the direction of arrow.
⑪ VF-44 board
⑨ Connector CN503 2P
⑩ Connector CN502 2P
⑧ CRT socket
Claw
④ VF lens assembly
⑦ CRT assembly
⑥ Remove the EVF cabinet (R) assembly by lifting up with the claw as it's fulcrum.

2-7. REMOVAL OF DD-76 BOARD

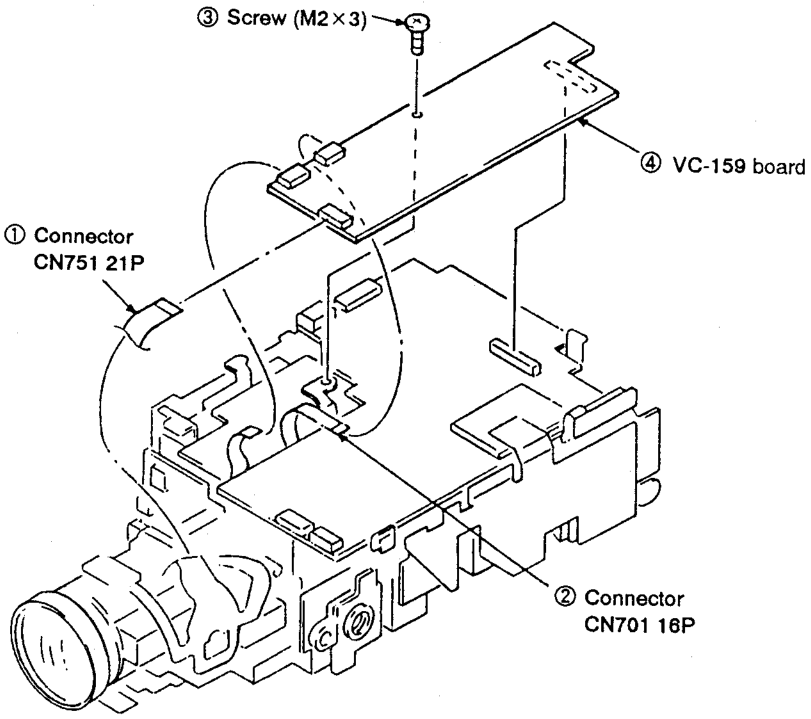

② DD-76 board
① Screw (M2×3)

2-8. REMOVAL OF CONTROL SWITCH BLOCK (FK)

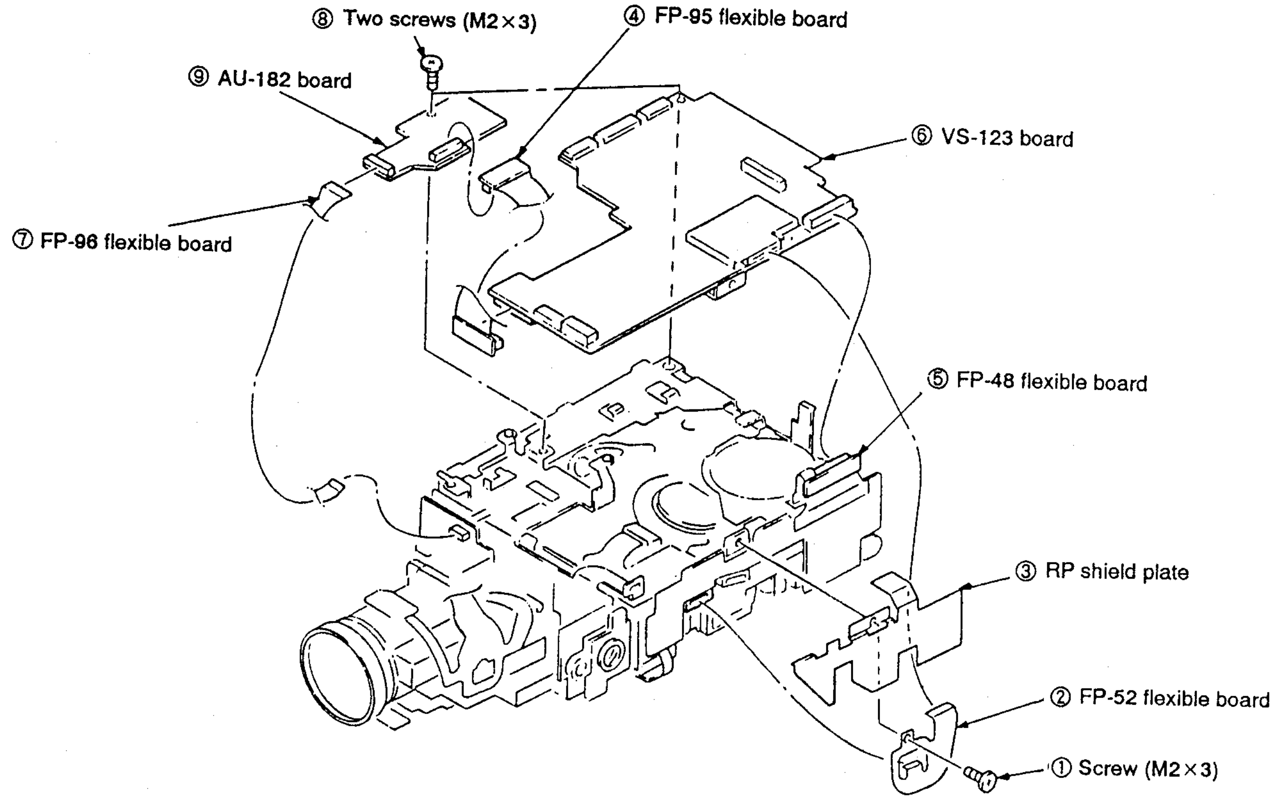
Note: ① Refer to 2-7 and remove the DD-76 board.


⑤ Screw (M2×3)
⑥ Control switch block (FK)
③ Remove the switch.
④ Screw (M2×3)
② Connector CN502 9P
(VS-123 board)

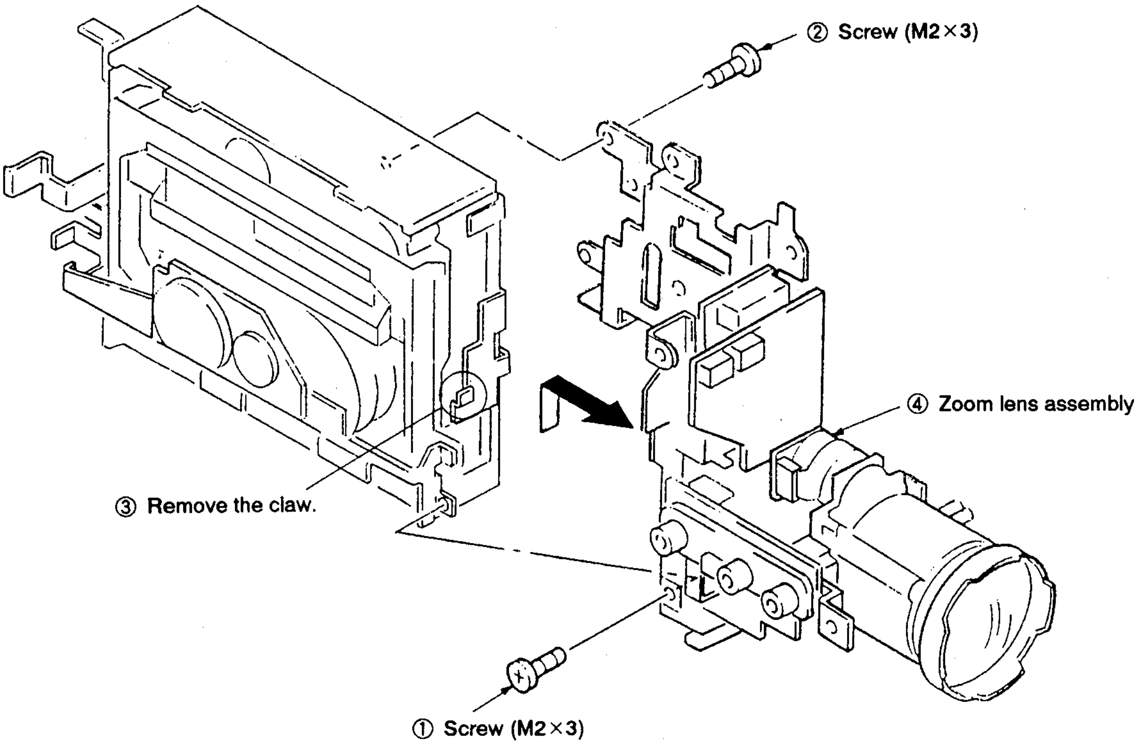
2-9. REMOVAL OF VC-159 BOARD


③ Screw (M2×3)
④ VC-159 board
① Connector
CN751 21P
② Connector
CN701 16P

2-10. REMOVAL OF VS-123 AND AU-182 BOARD

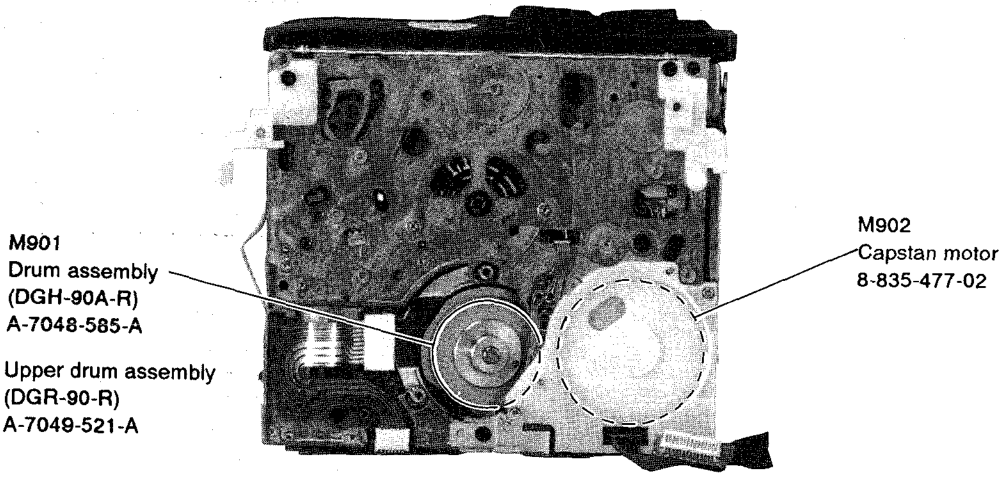

⑧ Two screws (M2×3)
④ FP-95 flexible board
⑨ AU-182 board
⑥ VS-123 board
⑦ FP-96 flexible board
⑤ FP-48 flexible board
③ RP shield plate
② FP-52 flexible board
① Screw (M2×3)

2-11. REMOVAL OF ZOOM LENS BLOCK ASSEMBLY

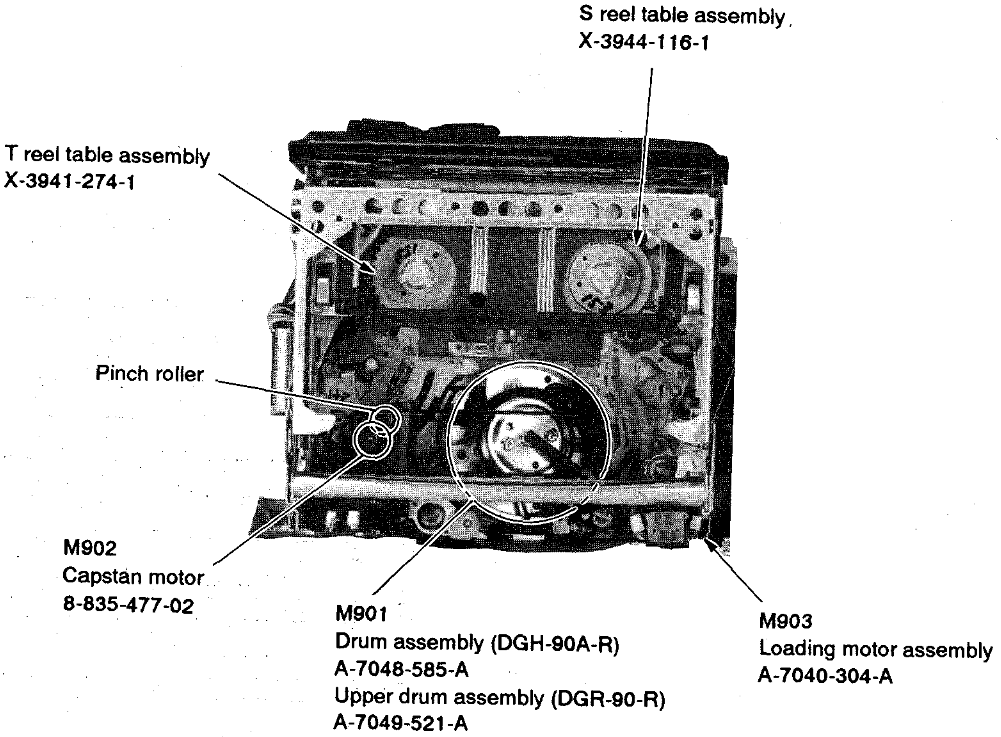

② Screw (M2×3)
④ Zoom lens assembly
③ Remove the claw.
① Screw (M2×3)

2-12. INTERNAL VIEWS

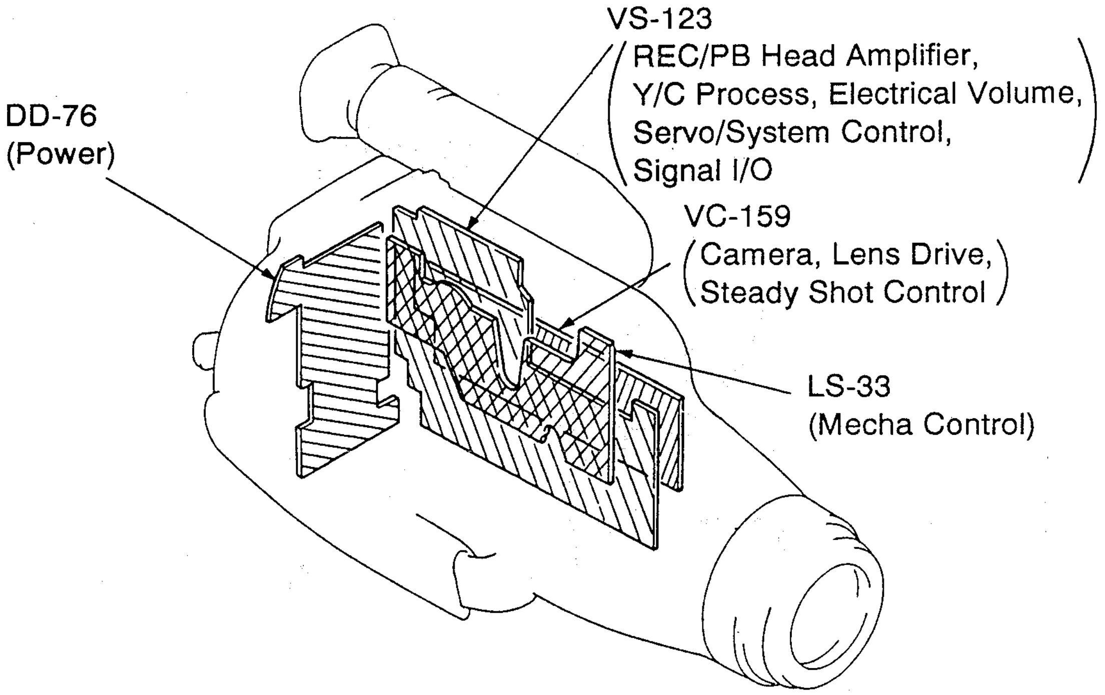
— Right side —

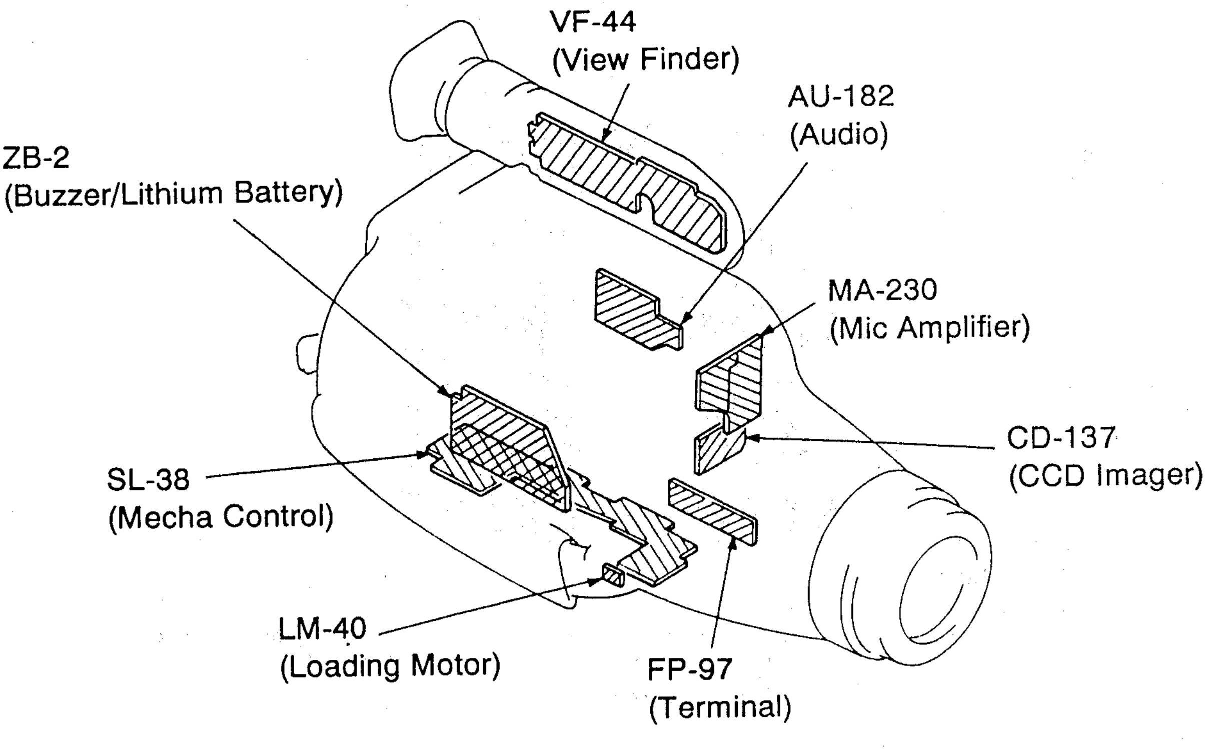

M901
Drum assembly
(DGH-90A-R)
A-7048-585-A
Upper drum assembly
(DGR-90-R)
A-7049-521-A
M902
Capstan motor
8-835-477-02

— Left side —


S reel table assembly
X-3944-116-1
T reel table assembly
X-3941-274-1
Pinch roller
M902
Capstan motor
8-835-477-02
M901
Drum assembly (DGH-90A-R)
A-7048-585-A
Upper drum assembly (DGR-90-R)
A-7049-521-A
M903
Loading motor assembly
A-7040-304-A

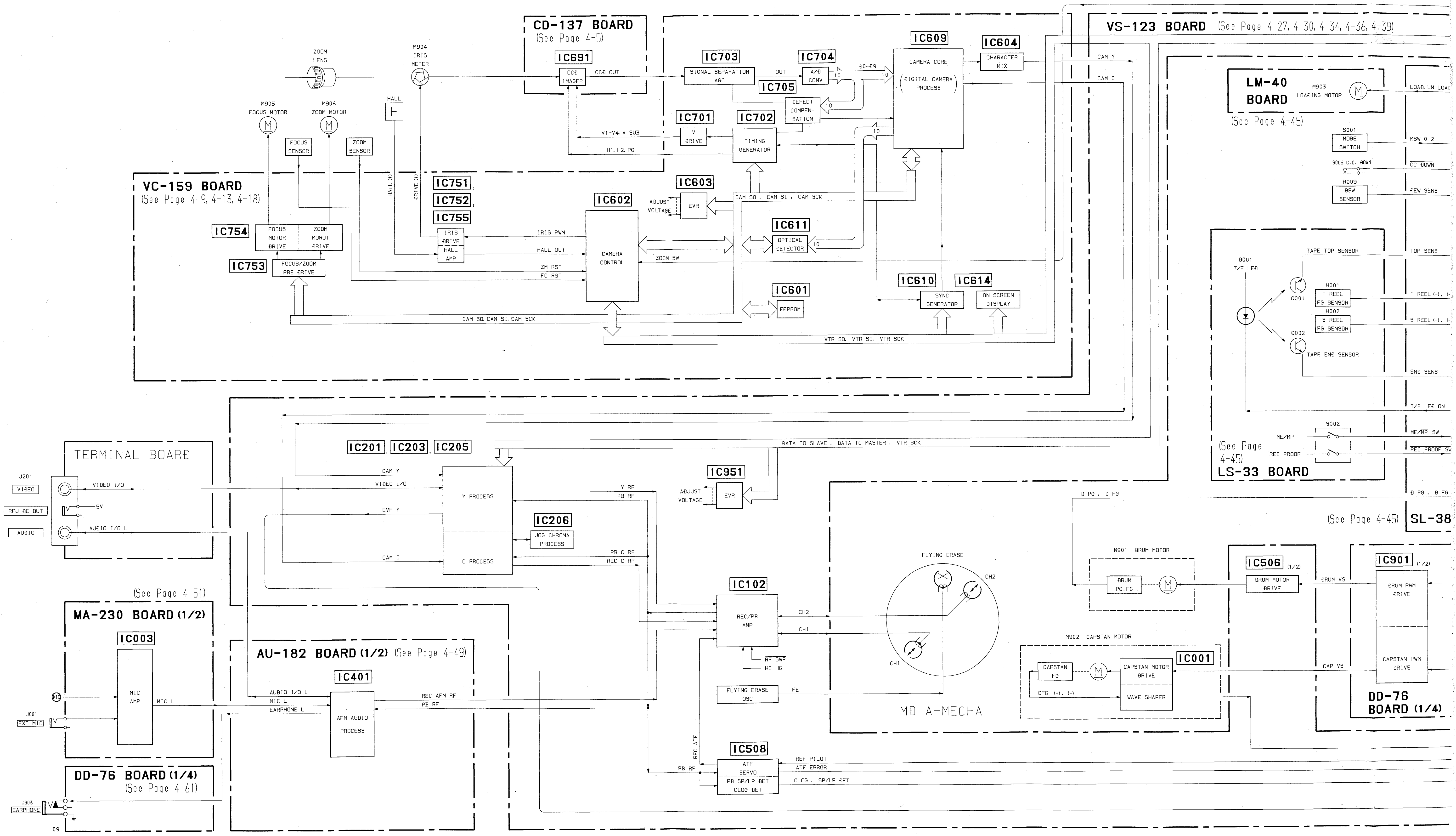
2-13. CIRCUIT BOARDS LOCATION

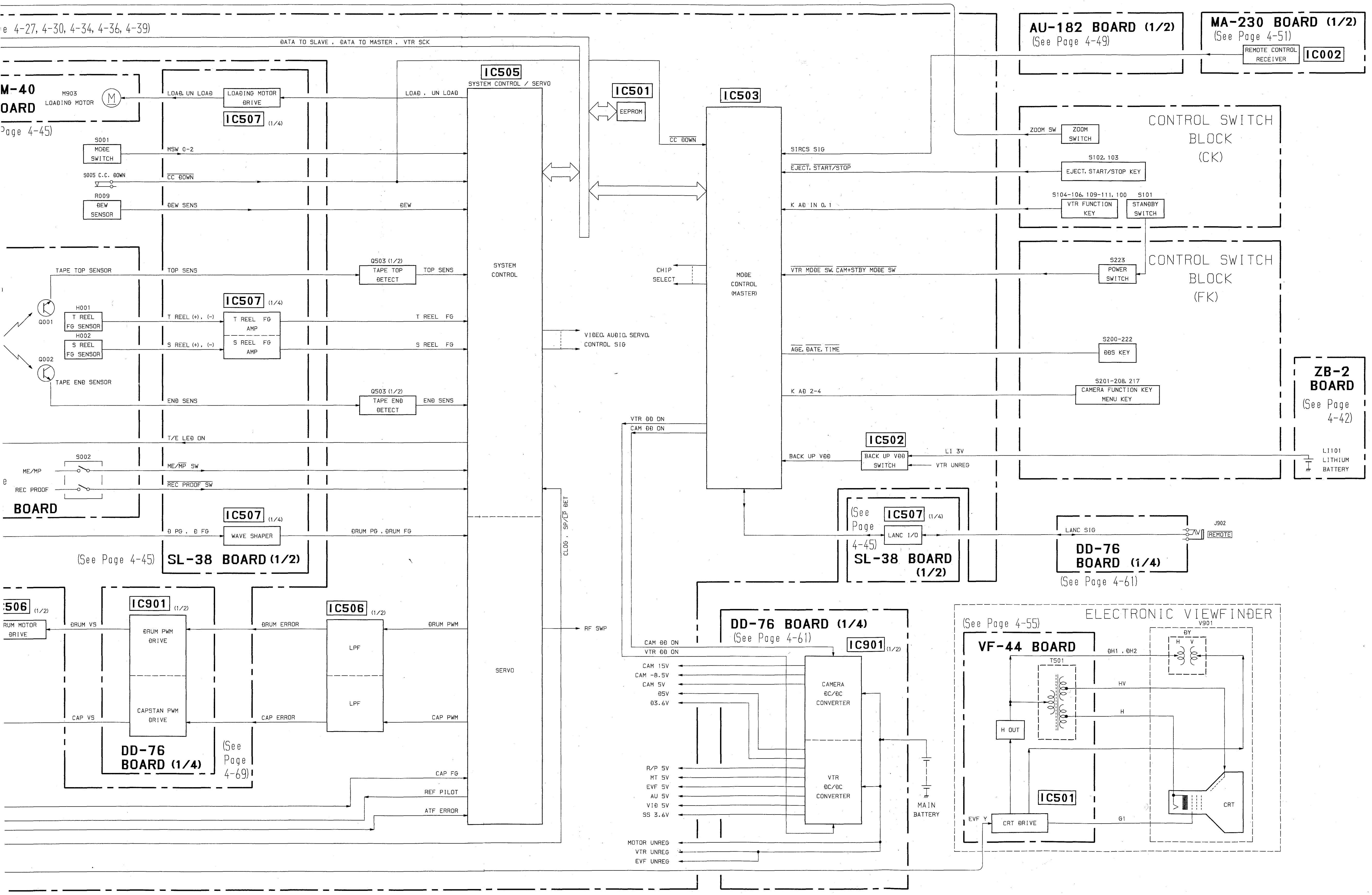

VS-123
(REC/PB Head Amplifier,
Y/C Process, Electrical Volume,
Servo/System Control,
Signal I/O)
DD-76
(Power)
VC-159
(Camera, Lens Drive,
Steady Shot Control)
LS-33
(Mecha Control)

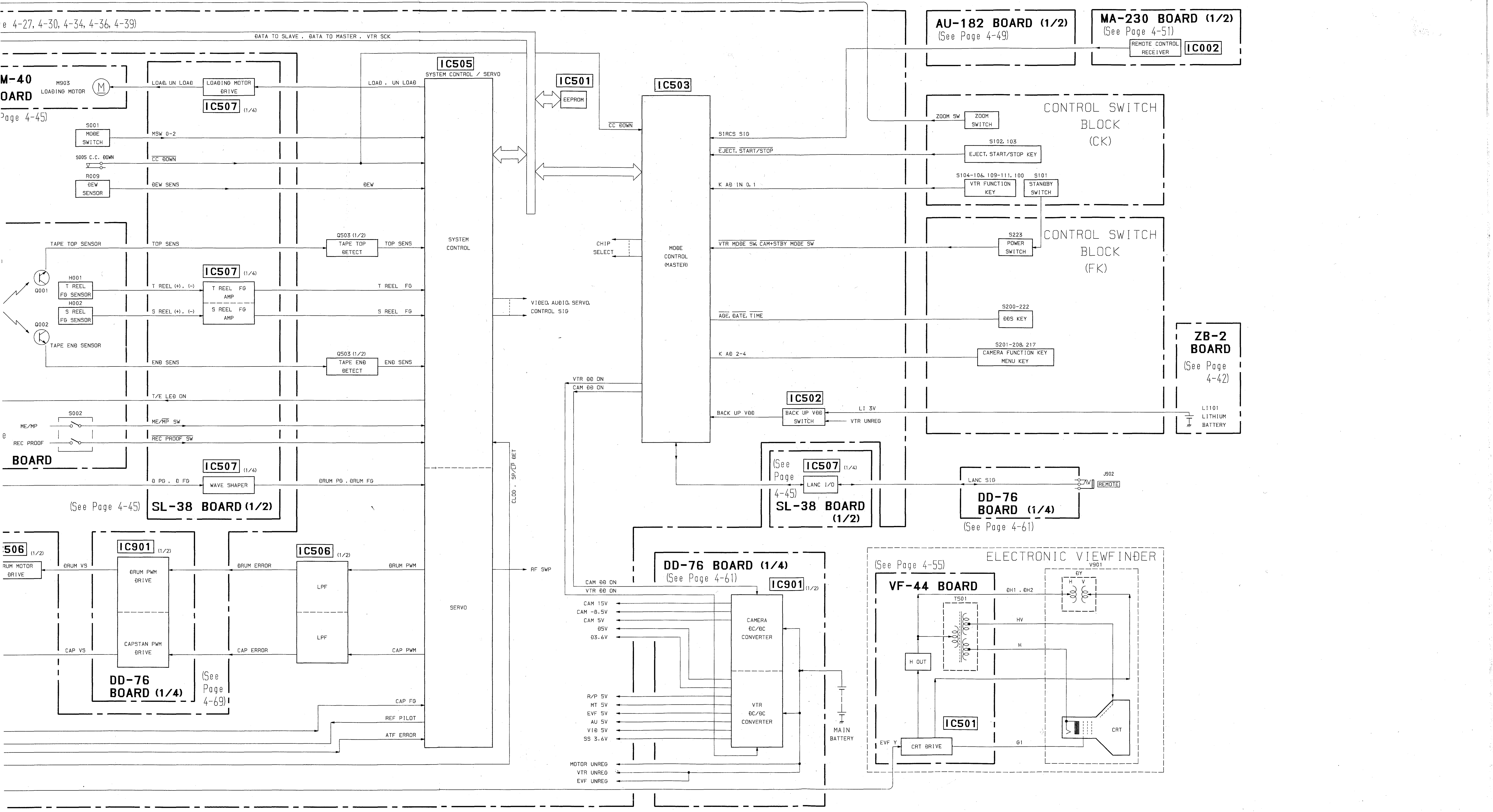

VF-44
(View Finder)
AU-182
(Audio)
ZB-2
(Buzzer/Lithium Battery)
MA-230
(Mic Amplifier)
CD-137
(CCD Imager)
SL-38
(Mecha Control)
LM-40
(Loading Motor)
FP-97
(Terminal)

SECTION 3
BLOCK DIAGRAMS

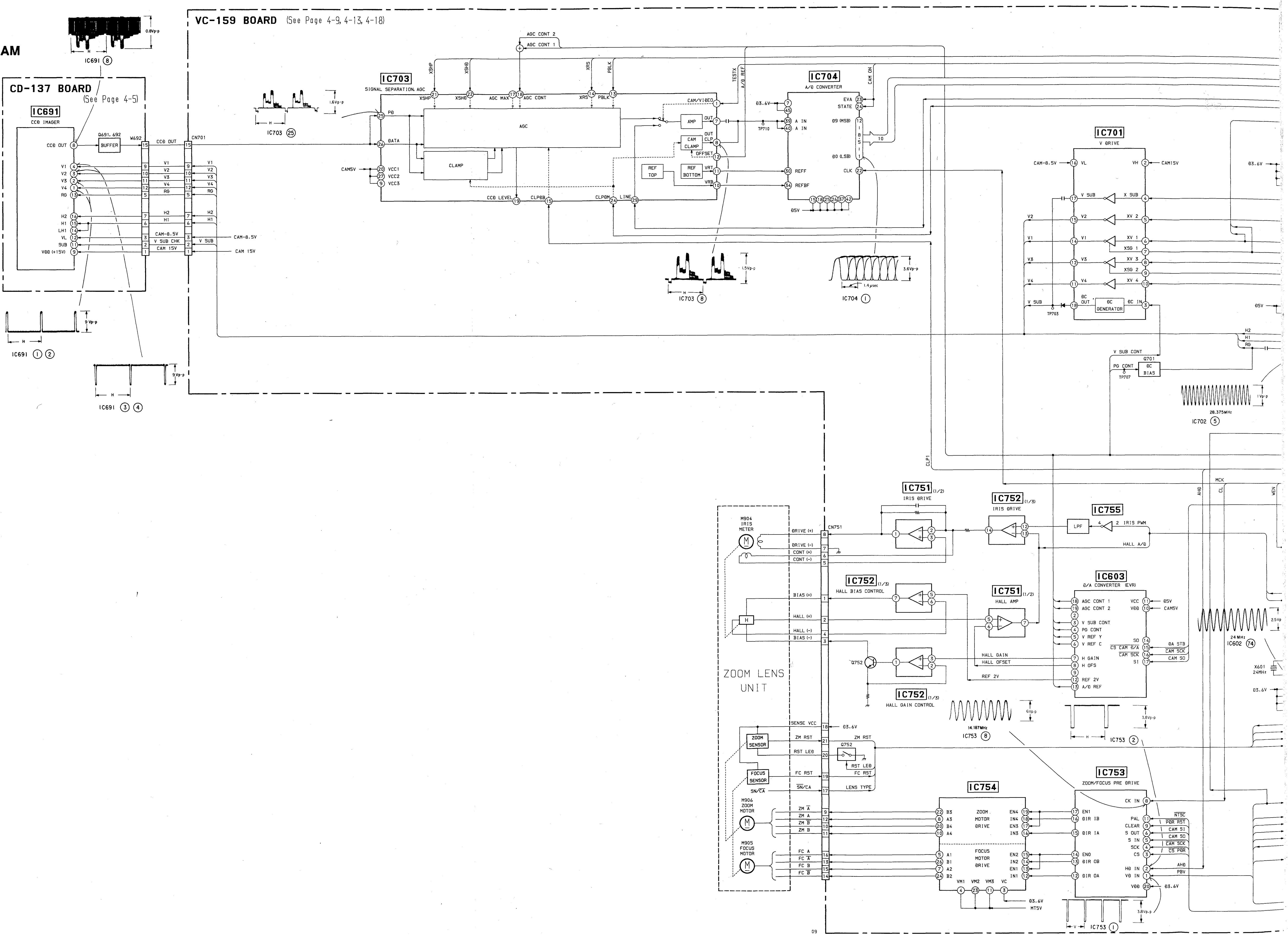
3-1. OVERALL BLOCK DIAGRAM

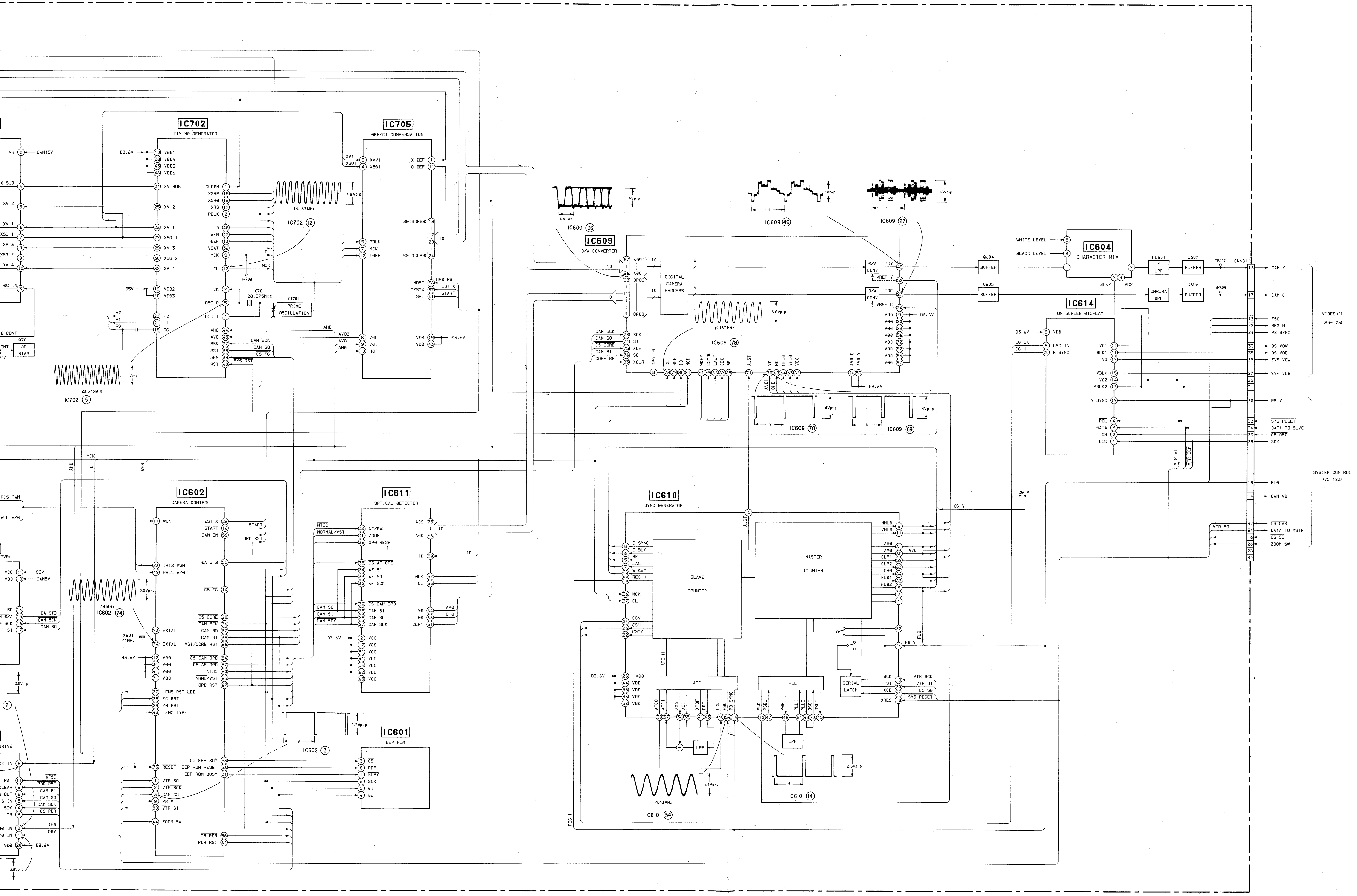

CD-137 BOARD
(See Page 4-5)
IC691
CCD IMAGER
CCD OUT
ZOOM LENS
M904 IRIS METER
HALL
M905 FOCUS MOTOR
M906 ZOOM MOTOR
FOCUS SENSOR
ZOOM SENSOR
IC703
SIGNAL SEPARATION AGC
OUT
IC704
A/D CONV
IC705
D0-D9
DEFECT COMPEN-SATION
IC701
V DRIVE
IC702
TIMING GENERATOR
V1-V4, V SUB
H1, H2, PG
IC609
CAMERA CORE
(DIGITAL CAMERA PROCESS)
IC604
CHARACTER MIX
VC-159 BOARD
(See Page 4-9, 4-13, 4-18)
IC754
FOCUS MOTOR DRIVE
ZOOM MOROT DRIVE
IC753
FOCUS/ZOOM PRE DRIVE
HALL (+)
DRIVE (+)
IC751, IC752, IC755
IRIS DRIVE
HALL AMP
IRIS PWM
HALL OUT
ZM RST
FC RST
IC602
CAMERA CONTROL
ZOOM SW
IC603
ADJUST VOLTAGE
EVR
CAM SO, CAM SI, CAM SCK
IC611
OPTICAL DETECTOR
IC601
EEPROM
IC610
SYNC GENERATOR
IC614
ON SCREEN DISPLAY
CAM SO, CAM SI, CAM SCK
VTR SO, VTR SI, VTR SCK
VS-123 BOARD (See Page 4-27, 4-30, 4-34, 4-36, 4-39)
CAM Y
CAM C
LM-40 BOARD
M903 LOADING MOTOR
(See Page 4-45)
LOAD, UN LOAD
S001 MODE SWITCH
MSW 0-2
S005 C.C. DOWN
CC DOWN
R009 DEW SENSOR
DEW SENS
D001 T/E LED
TAPE TOP SENSOR
TOP SENS
Q001
H001 T REEL FG SENSOR
T REEL (+), (-)
H002 S REEL FG SENSOR
S REEL (+), (-)
Q002
TAPE END SENSOR
END SENS
T/E LED ON
S002
ME/MP
REC PROOF
ME/MP SW
REC PROOF SW
(See Page 4-45)
LS-33 BOARD
D PG, D FG
(See Page 4-45)
SL-38
TERMINAL BOARD
J201
VIDEO
RFU DC OUT
AUDIO
VIDEO I/O
5V
AUDIO I/O L
IC201, IC203, IC205
DATA TO SLAVE, DATA TO MASTER, VTR SCK
CAM Y
VIDEO I/O
EVF Y
Y PROCESS
CAM C
C PROCESS
Y RF
PB RF
IC206
JOG CHROMA PROCESS
PB C RF
REC C RF
IC951
ADJUST VOLTAGE
EVR
IC102
REC/PB AMP
CH2
CH1
RF SWP
HC HG
FLYING ERASE OSC
FE
FLYING ERASE
CH2
CH1
MD A-MECHA
M901 DRUM MOTOR
DRUM PG, FG
IC506 (1/2)
DRUM MOTOR DRIVE
DRUM VS
IC901 (1/2)
DRUM PWM DRIVE
M902 CAPSTAN MOTOR
CAPSTAN FG
IC001
CAPSTAN MOTOR DRIVE
WAVE SHAPER
CFG (+), (-)
CAP VS
CAPSTAN PWM DRIVE
DD-76 BOARD (1/4)
(See Page 4-51)
MA-230 BOARD (1/2)
IC003
MIC AMP
MIC L
J001 EXT MIC
AU-182 BOARD (1/2) (See Page 4-49)
IC401
AUDIO I/O L
MIC L
EARPHONE L
AFM AUDIO PROCESS
REC AFM RF
PB RF
REC ATF
PB RF
IC508
ATF SERVO
PB SP/LP DET
CLOG DET
REF PILOT
ATF ERROR
CLOG, SP/LP DET
DD-76 BOARD (1/4)
(See Page 4-61)
J903 EARPHONE
09


e 4-27, 4-30, 4-34, 4-36, 4-39)
DATA TO SLAVE , DATA TO MASTER , VTR SCK
M-40
OARD
Page 4-45)
M903
LOADING MOTOR
LOAD, UN LOAD
LOADING MOTOR DRIVE
IC507 (1/4)
IC505
SYSTEM CONTROL / SERVO
LOAD , UN LOAD
IC501
EEPROM
IC503
S001
MODE SWITCH
MSW 0-2
S005 C.C. DOWN
CC DOWN
R009
DEW SENSOR
DEW SENS
DEW
CC DOWN
SIRCS SIG
EJECT, START/STOP
K AD IN 0, 1
TAPE TOP SENSOR
TOP SENS
Q503 (1/2)
TAPE TOP DETECT
TOP SENS
SYSTEM CONTROL
CHIP SELECT
MODE CONTROL (MASTER)
VTR MODE SW, CAM+STBY MODE SW
Q001
H001
T REEL FG SENSOR
H002
S REEL FG SENSOR
Q002
T REEL (+), (-)
S REEL (+), (-)
IC507 (1/4)
T REEL FG AMP
S REEL FG AMP
T REEL FG
S REEL FG
VIDEO, AUDIO, SERVO, CONTROL SIG
AGC, DATE, TIME
TAPE END SENSOR
END SENS
Q503 (1/2)
TAPE END DETECT
END SENS
K AD 2-4
VTR DD ON
CAM DD ON
T/E LED ON
S002
ME/MP
ME/MP SW
REC PROOF
REC PROOF SW
BOARD
IC502
BACK UP VDD
BACK UP VDD SWITCH
L1 3V
VTR UNREG
IC507 (1/4)
D PG , D FG
WAVE SHAPER
DRUM PG , DRUM FG
CLOG , SP/CP DET
(See Page 4-45)
SL-38 BOARD (1/2)
(See Page 4-45)
IC507 (1/4)
LANC I/O
SL-38 BOARD (1/2)
LANC SIG
J902
REMOTE
DD-76 BOARD (1/4)
(See Page 4-61)
AU-182 BOARD (1/2)
(See Page 4-49)
MA-230 BOARD (1/2)
(See Page 4-51)
REMOTE CONTROL RECEIVER
IC002
ZOOM SW
ZOOM SWITCH
CONTROL SWITCH BLOCK (CK)
S102, 103
EJECT, START/STOP KEY
S104-106, 109-111, 100
VTR FUNCTION KEY
S101
STANDBY SWITCH
S223
POWER SWITCH
CONTROL SWITCH BLOCK (FK)
S200-222
DDS KEY
S201-208, 217
CAMERA FUNCTION KEY MENU KEY
ZB-2 BOARD
(See Page 4-42)
L1101
LITHIUM BATTERY
506 (1/2)
RUM MOTOR DRIVE
DRUM VS
IC901 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
CAP VS
DRUM ERROR
CAP ERROR
IC506 (1/2)
LPF
LPF
DRUM PWM
CAP PWM
SERVO
RF SWP
DD-76 BOARD (1/4)
(See Page 4-69)
CAP FG
REF PILOT
ATF ERROR
DD-76 BOARD (1/4)
(See Page 4-61)
IC901 (1/2)
CAM DD ON
VTR DD ON
CAM 15V
CAM -8.5V
CAM 5V
D5V
D3.6V
CAMERA DC/DC CONVERTER
R/P 5V
MT 5V
EVF 5V
AU 5V
VID 5V
SS 3.6V
VTR DC/DC CONVERTER
MAIN BATTERY
MOTOR UNREG
VTR UNREG
EVF UNREG
ELECTRONIC VIEWFINDER
(See Page 4-55)
V901
VF-44 BOARD
DY
H V
DH1 , DH2
T501
HV
H
H OUT
IC501
EVF Y
CRT DRIVE
G1
CRT

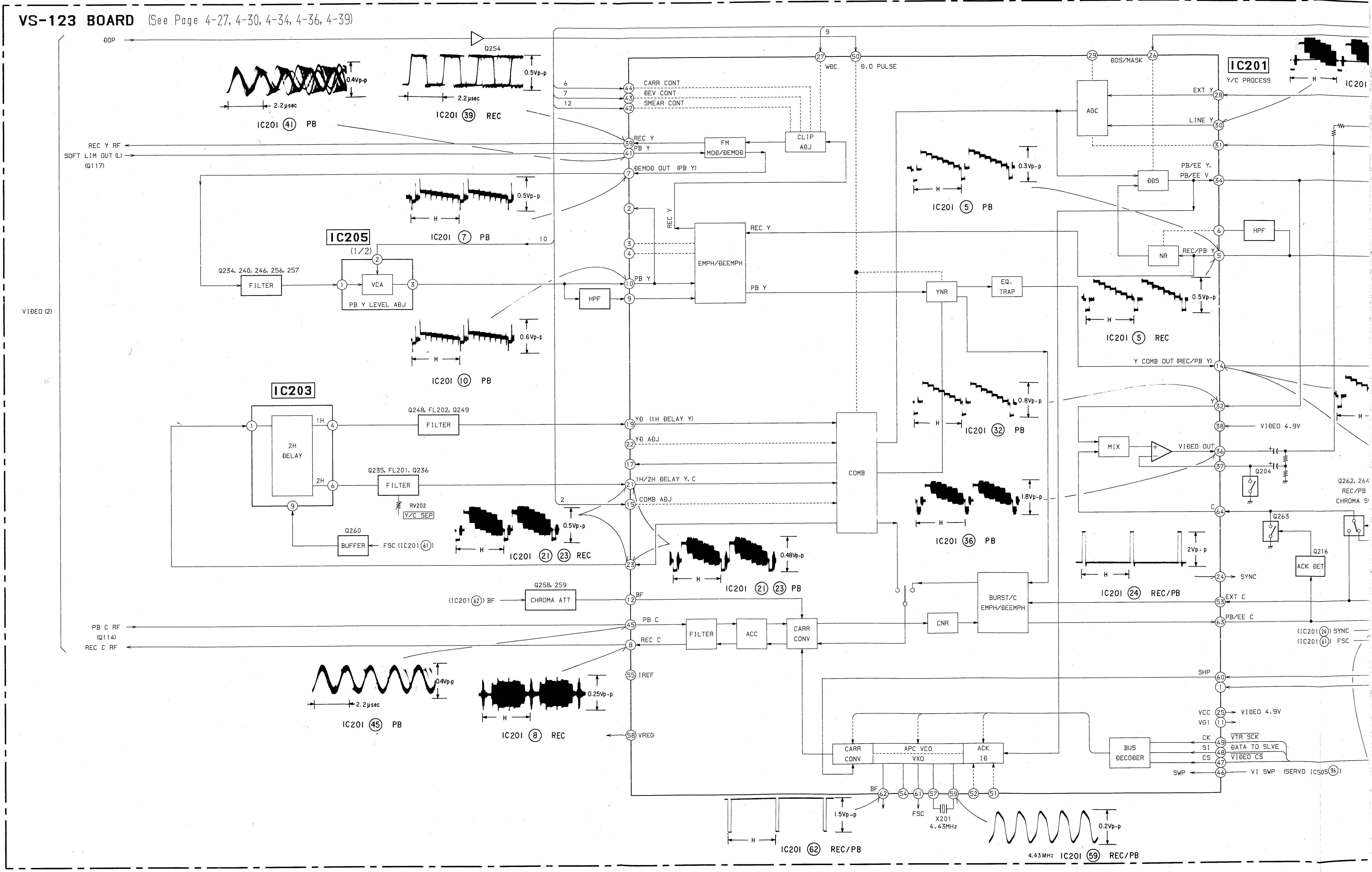

e 4-27, 4-30, 4-34, 4-36, 4-39)
DATA TO SLAVE , DATA TO MASTER , VTR SCK
M-40 BOARD
M903 LOADING MOTOR
Page 4-45)
S001 MODE SWITCH
S005 C.C. DOWN
R009 DEW SENSOR
LOAD, UN LOAD
LOADING MOTOR DRIVE
IC507 (1/4)
MSW 0-2
CC DOWN
DEW SENS
DEW
IC505
SYSTEM CONTROL / SERVO
LOAD , UN LOAD
IC501
EEPROM
IC503
CC DOWN
TAPE TOP SENSOR
TOP SENS
Q503 (1/2) TAPE TOP DETECT
TOP SENS
H001 T REEL FG SENSOR
Q001
H002 S REEL FG SENSOR
Q002
TAPE END SENSOR
IC507 (1/4)
T REEL (+), (-)
T REEL FG AMP
S REEL (+), (-)
S REEL FG AMP
T REEL FG
S REEL FG
END SENS
Q503 (1/2) TAPE END DETECT
END SENS
T/E LED ON
S002
ME/MP
REC PROOF
ME/MP SW
REC PROOF SW
BOARD
IC507 (1/4)
D PG , D FG
WAVE SHAPER
DRUM PG , DRUM FG
(See Page 4-45)
SL-38 BOARD (1/2)
SYSTEM CONTROL
VIDEO, AUDIO, SERVO, CONTROL SIG
CLOD , SP/LP DET
RF SWP
SERVO
CHIP SELECT
MODE CONTROL (MASTER)
SIRCS SIG
EJECT, START/STOP
K AD IN 0, 1
VTR MODE SW, CAM+STBY MODE SW
AGE, DATE, TIME
K AD 2-4
VTR DD ON
CAM DD ON
BACK UP VDD
IC502
BACK UP VDD SWITCH
LI 3V
VTR UNREG
(See Page 4-45)
IC507 (1/4)
LANC I/O
SL-38 BOARD (1/2)
AU-182 BOARD (1/2)
(See Page 4-49)
MA-230 BOARD (1/2)
(See Page 4-51)
REMOTE CONTROL RECEIVER
IC002
CONTROL SWITCH BLOCK (CK)
ZOOM SW
ZOOM SWITCH
S102, 103
EJECT, START/STOP KEY
S104-106, 109-111, 100
VTR FUNCTION KEY
S101
STANDBY SWITCH
CONTROL SWITCH BLOCK (FK)
S223
POWER SWITCH
S200-222
DDS KEY
S201-208, 217
CAMERA FUNCTION KEY MENU KEY
ZB-2 BOARD
(See Page 4-42)
L1101 LITHIUM BATTERY
LANC SIG
J902
REMOTE
DD-76 BOARD (1/4)
(See Page 4-61)
506 (1/2)
RUM MOTOR DRIVE
DRUM VS
IC901 (1/2)
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
CAP VS
DD-76 BOARD (1/4)
(See Page 4-69)
DRUM ERROR
CAP ERROR
IC506 (1/2)
LPF
LPF
DRUM PWM
CAP PWM
CAP FG
REF PILOT
ATF ERROR
DD-76 BOARD (1/4)
(See Page 4-61)
IC901 (1/2)
CAM DD ON
VTR DD ON
CAM 15V
CAM -8.5V
CAM 5V
D5V
D3.6V
CAMERA DC/DC CONVERTER
R/P 5V
MT 5V
EVF 5V
AU 5V
VID 5V
SS 3.6V
VTR DC/DC CONVERTER
MOTOR UNREG
VTR UNREG
EVF UNREG
MAIN BATTERY
ELECTRONIC VIEWFINDER
(See Page 4-55)
VF-44 BOARD
V901
DY
H V
DH1 , DH2
T501
HV
H
H OUT
IC501
EVF Y
CRT DRIVE
G1
CRT

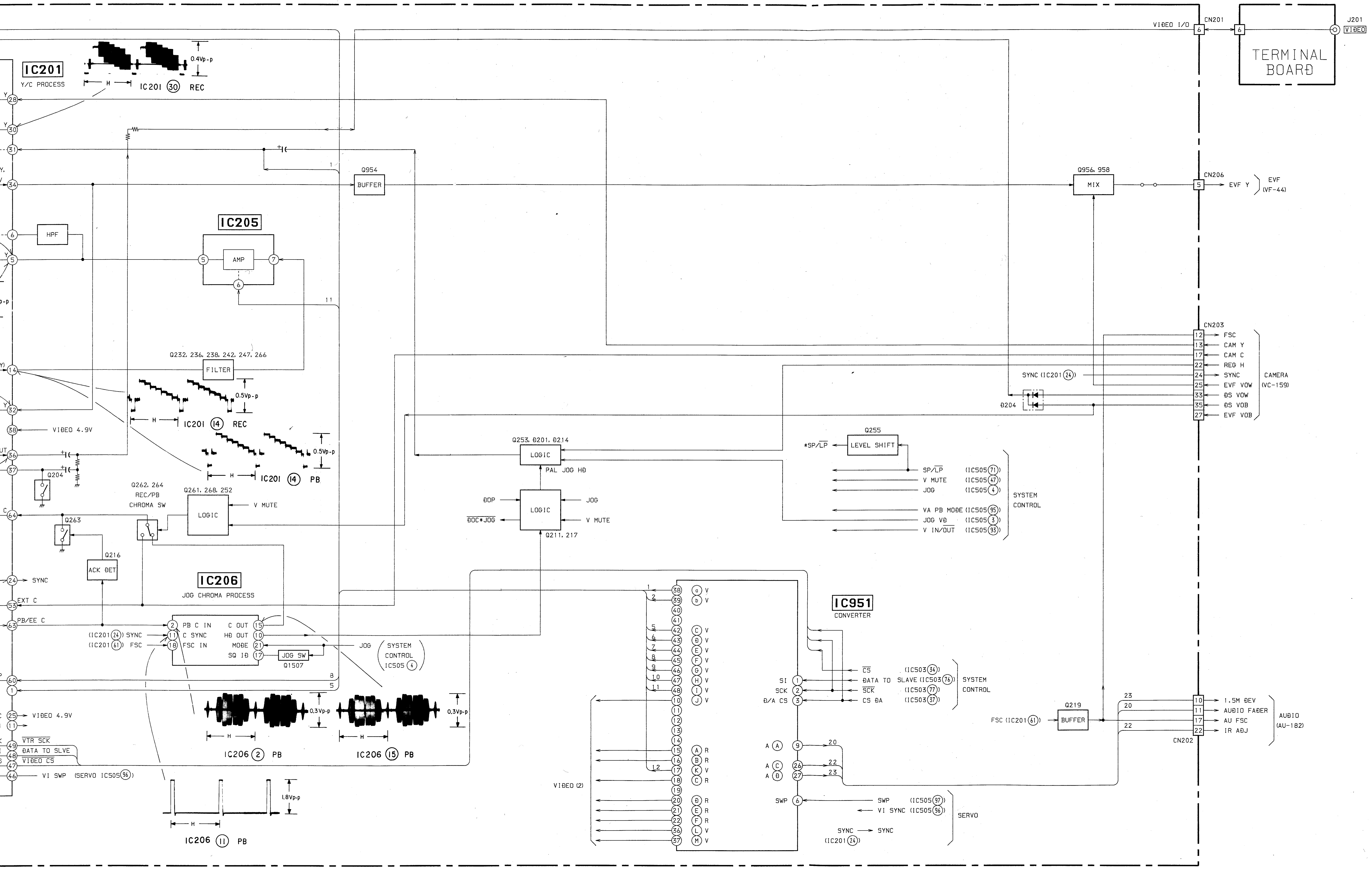
3-2. CAMERA BLOCK DIAGRAM

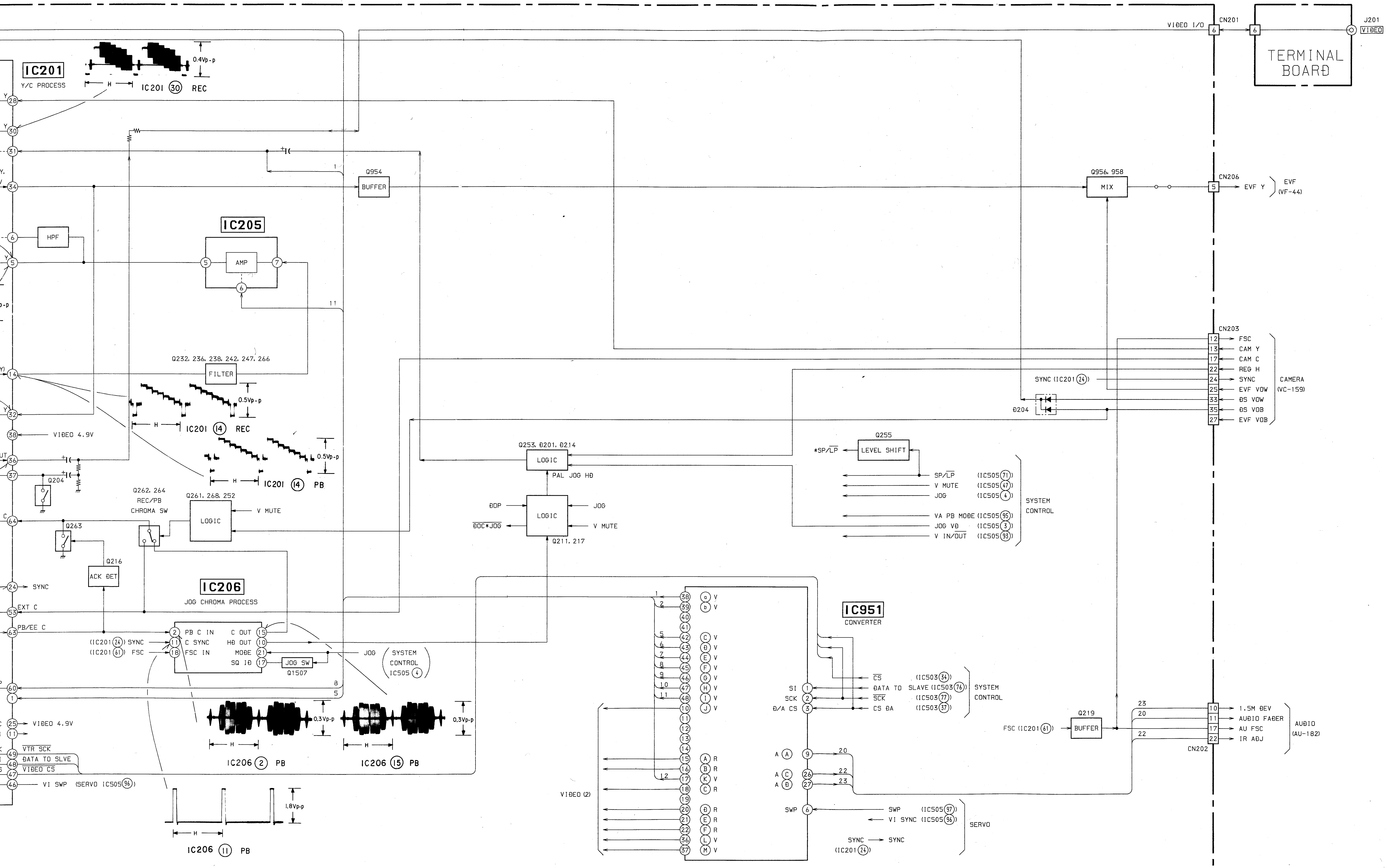

IC691 ⑧
0.8Vp-p
CD-137 BOARD
(See Page 4-5)
IC691
CCD IMAGER
CCD OUT
Q691, 692
BUFFER
W692
V1
V2
V3
V4
RG
H2
H1
LH1
VL
SUB
VDD (+15V)
CAM-8.5V
V SUB CHK
CAM 15V
IC691 ① ②
9Vp-p
IC691 ③ ④
9Vp-p
VC-159 BOARD (See Page 4-9, 4-13, 4-18)
CN701
CCD OUT
V SUB
CAM-8.5V
CAM 15V
IC703 ㉕
1.6Vp-p
IC703
SIGNAL SEPARATION, AGC
XSHP
XSHD
AGC MAX
AGC CONT
XRS
PBLK
PD
DATA
AGC
CLAMP
CAM5V
VCC1
VCC2
VCC3
CCD LEVEL
CLPOB
CLPDM
LINE
AGC CONT 2
AGC CONT 1
TESTX
A/D REF
CAM/VIDEO
AMP
OUT
CAM CLAMP
OUT CLP
OFFSET
REF TOP
REF BOTTOM
VRT
VRB
IC703 ⑧
1.5Vp-p
IC704
A/D CONVERTER
D3.6V
TP710
A IN
REFF
REFBF
D5V
EVA
STATE
CAM ON
D9 (MSB)
D0 (LSB)
CLK
IC704 ①
3.6Vp-p
1.4μsec
IC701
V DRIVE
CAM-8.5V
VL
VH
CAM15V
V SUB
X SUB
XV 2
XV 1
XSG 1
XV 3
XSG 2
XV 4
DC OUT
DC GENERATOR
DC IN
TP703
D3.6V
D5V
H2
H1
RG
V SUB CONT
PG CONT
TP707
Q701
DC BIAS
28.375MHz
1Vp-p
IC702 ⑤
CLP1
AHD
CL
MCK
WEN
M904
IRIS METER
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
CN751
IC751 (1/2)
IRIS DRIVE
IC752 (1/3)
IRIS DRIVE
IC755
LPF
IRIS PWM
HALL A/D
IC752 (1/3)
HALL BIAS CONTROL
BIAS (+)
HALL (+)
HALL (-)
BIAS (-)
IC751 (1/2)
HALL AMP
Q752
IC752 (1/3)
HALL GAIN CONTROL
HALL GAIN
HALL OFSET
REF 2V
IC603
D/A CONVERTER (EVR)
AGC CONT 1
AGC CONT 2
V SUB CONT
PG CONT
V REF Y
V REF C
H GAIN
H OFS
REF 2V
A/D REF
VCC
VDD
D5V
CAM5V
SO
CS CAM D/A
CAM SCK
SI
DA STB
CAM SCK
CAM SO
2.5Vp
24MHz
IC602 ㉔
X601
24MHz
D3.6V
ZOOM LENS UNIT
SENSE VCC
D3.6V
ZOOM SENSOR
ZM RST
RST LED
Q752
FOCUS SENSOR
FC RST
SN/CA
LENS TYPE
M906
ZOOM MOTOR
ZM A
ZM B
M905
FOCUS MOTOR
FC A
FC B
14.187MHz
6Vp-p
IC753 ⑧
IC753 ②
3.8Vp-p
IC754
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
B3
A3
B4
A4
A1
B1
A2
B2
EN4
IN4
EN3
IN3
EN2
IN2
EN1
IN1
VM1
VM2
VM3
VC
D3.6V
MT5V
IC753
ZOOM/FOCUS PRE DRIVE
CK IN
EN1
DIR 1B
DIR 1A
EN0
DIR 0B
DIR 0A
PAL
CLEAR
S OUT
S IN
SCK
CS
HD IN
VD IN
VDD
NTSC
PBR RST
CAM SI
CAM SO
CAM SCK
CS PBR
AHD
PBV
D3.6V
3.8Vp-p
IC753 ①
09


IC702
TIMING GENERATOR
IC705
DEFECT COMPENSATION
IC609
D/A CONVERTER
DIGITAL CAMERA PROCESS
IC604
CHARACTER MIX
IC614
ON SCREEN DISPLAY
IC602
CAMERA CONTROL
IC611
OPTICAL DETECTOR
IC610
SYNC GENERATOR
SLAVE COUNTER
MASTER COUNTER
AFC
PLL
LPF
SERIAL LATCH
IC601
EEP ROM
Q604 BUFFER
Q605 BUFFER
Q606 BUFFER
Q607 BUFFER
FL601 Y LPF
CHROMA BPF
WHITE LEVEL
BLACK LEVEL
CT701 PRIME OSCILLATION
X701 28.375MHz
X601 24MHz
Q701 BC BIAS
TP709
TP607
TP609
CN601
CAM Y
CAM C
FSC
REG H
PB SYNC
DS VDW
DS VDB
EVF VDW
EVF VDB
PB V
SYS RESET
DATA TO SLVE
CS OSD
SCK
FLD
CAM VD
CS CAM
DATA TO MSTR
CS SG
ZOOM SW
VIDEO (1) (VS-123)
SYSTEM CONTROL (VS-123)
14.187MHz
4.8Vp-p
IC702 (12)
28.375MHz
1Vp-p
IC702 (5)
1.4usec
4Vp-p
IC609 (96)
1Vp-p
IC609 (49)
0.3Vp-p
IC609 (27)
14.187MHz
3.8Vp-p
IC609 (78)
4Vp-p
IC609 (70)
4Vp-p
IC609 (69)
24MHz
2.5Vp-p
IC602 (74)
4.7Vp-p
IC602 (3)
2.6Vp-p
IC610 (14)
4.43MHz
1.4Vp-p
IC610 (54)
3.8Vp-p
D3.6V
D5V
CAM15V
CAM5V

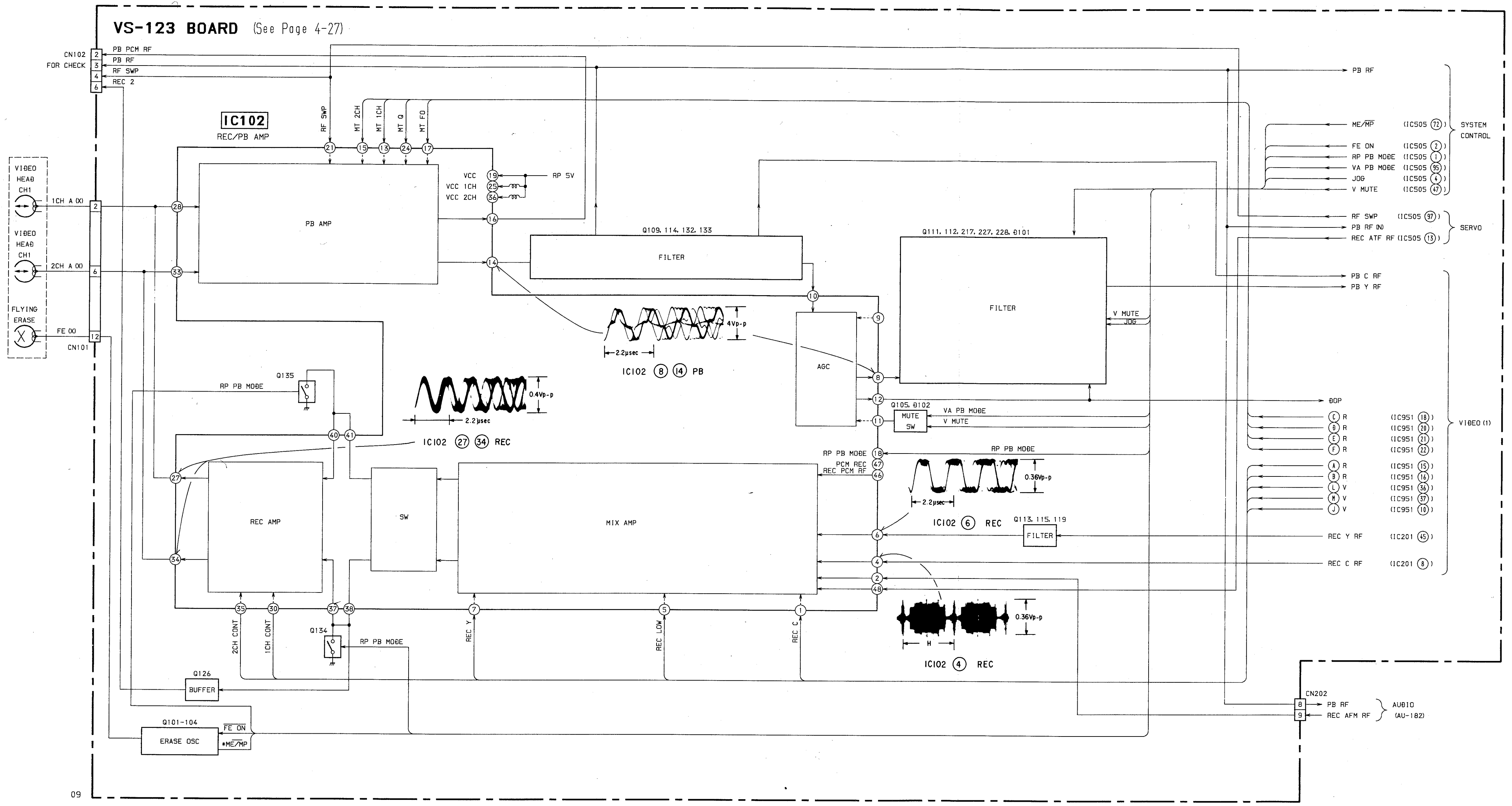
3-3. VIDEO (1) BLOCK DIAGRAM


VS-123 BOARD (See Page 4-27, 4-30, 4-34, 4-36, 4-39)
DOP
Q254
IC201 (41) PB
0.4Vp-p
2.2μsec
IC201 (39) REC
0.5Vp-p
REC Y RF
SOFT LIM OUT (L)
(Q117)
IC201 (7) PB
0.5Vp-p
H
IC205
(1/2)
VCA
PB Y LEVEL ADJ
Q234, 240, 246, 256, 257
FILTER
VIDEO (2)
IC201 (10) PB
0.6Vp-p
HPF
IC203
2H DELAY
1H
2H
Q248, FL202, Q249
FILTER
Q235, FL201, Q236
FILTER
RV202
Y/C SEP
Q260
BUFFER
FSC (IC201 (61))
IC201 (21) (23) REC
0.5Vp-p
IC201 (21) (23) PB
0.48Vp-p
Q258, 259
CHROMA ATT
(IC201 (62)) BF
PB C RF
(Q114)
REC C RF
IC201 (45) PB
0.4Vp-p
2.2μsec
IC201 (8) REC
0.25Vp-p
9
6
7
12
10
2
WDC
D.O PULSE
CARR CONT
DEV CONT
SMEAR CONT
REC Y
PB Y
FM MOD/DEMOD
CLIP ADJ
DEMOD OUT (PB Y)
REC Y
EMPH/DEEMPH
REC Y
PB Y
PB Y
YNR
EQ. TRAP
YD (1H DELAY Y)
YD ADJ
1H/2H DELAY Y, C
COMB ADJ
COMB
BF
PB C
REC C
FILTER
ACC
CARR CONV
CNR
BURST/C EMPH/DEEMPH
IREF
VREG
CARR CONV
APC VCO
VXO
ACK ID
BF
FSC
X201 4.43MHz
IC201 (62) REC/PB
1.5Vp-p
4.43MHz IC201 (59) REC/PB
0.2Vp-p
IC201 (5) PB
0.3Vp-p
IC201 (5) REC
0.5Vp-p
IC201 (32) PB
0.8Vp-p
IC201 (36) PB
1.8Vp-p
IC201 (24) REC/PB
2Vp-p
IC201
Y/C PROCESS
DOS/MASK
AGC
EXT Y
LINE Y
PB/EE Y, PB/EE V
DDS
HPF
NR
REC/PB Y
Y COMB OUT (REC/PB Y)
Y
VIDEO 4.9V
MIX
VIDEO OUT
Q204
C
Q263
Q216
ACK DET
SYNC
EXT C
PB/EE C
(IC201 (24)) SYNC
(IC201 (61)) FSC
Q262, 264
REC/PB
CHROMA SW
SHP
VCC
VG1
VIDEO 4.9V
CK
SI
CS
VTR SCK
DATA TO SLVE
VIDEO CS
BUS DECODER
SWP
VI SWP (SERVO IC505 (96))
IC201

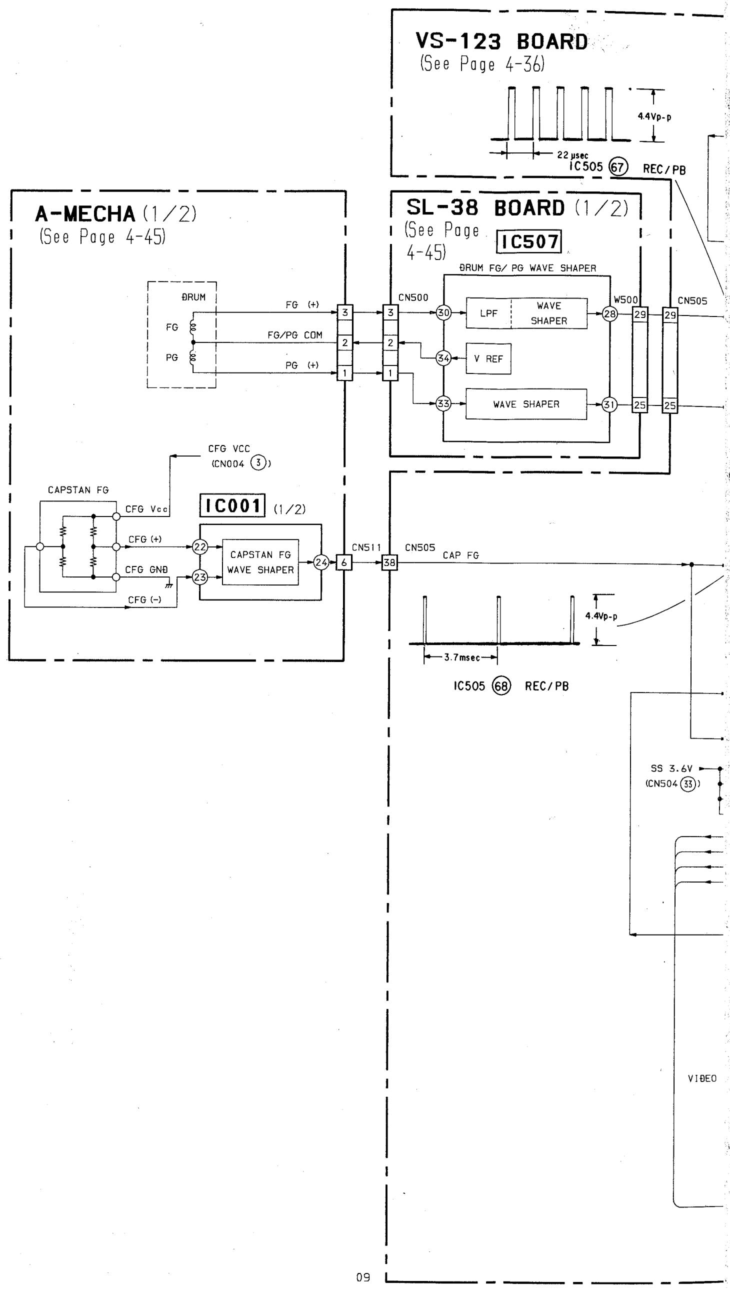

IC201
Y/C PROCESS
0.4Vp-p
H
IC201 30 REC
IC205
AMP
HPF
Q954
BUFFER
Q956, 958
MIX
Q232, 236, 238, 242, 247, 266
FILTER
0.5Vp-p
IC201 14 REC
IC201 14 PB
VIDEO 4.9V
Q204
Q262, 264
REC/PB
CHROMA SW
Q261, 268, 252
LOGIC
V MUTE
Q263
Q216
ACK DET
SYNC
EXT C
PB/EE C
IC206
JOG CHROMA PROCESS
PB C IN
C OUT
C SYNC
HD OUT
FSC IN
MODE
SQ ID
(IC201 24) SYNC
(IC201 61) FSC
JOG SW
Q1507
JOG
SYSTEM CONTROL IC505 4
IC206 2 PB
IC206 15 PB
0.3Vp-p
VIDEO 4.9V
VTR SCK
DATA TO SLVE
VIDEO CS
VI SWP (SERVO IC505 96)
1.8Vp-p
IC206 11 PB
Q253, D201, D214
LOGIC
PAL JOG HD
DDP
DOC*JOG
Q211, 217
JOG
V MUTE
Q255
LEVEL SHIFT
*SP/LP
SP/LP (IC505 71)
V MUTE (IC505 47)
JOG (IC505 4)
VA PB MODE (IC505 95)
JOG VD (IC505 3)
V IN/OUT (IC505 93)
SYSTEM CONTROL
IC951
CONVERTER
SI
SCK
D/A CS
CS (IC503 34)
DATA TO SLAVE (IC503 76)
SCK (IC503 77)
CS DA (IC503 37)
SYSTEM CONTROL
VIDEO (2)
SWP (IC505 97)
VI SYNC (IC505 96)
SERVO
SYNC (IC201 24)
VIDEO I/O
CN201
TERMINAL BOARD
J201
VIDEO
CN206
EVF Y
EVF (VF-44)
CN203
FSC
CAM Y
CAM C
REG H
SYNC
EVF VDW
DS VDW
DS VDB
EVF VDB
CAMERA (VC-159)
SYNC (IC201 24)
D204
FSC (IC201 61)
Q219
BUFFER
1.5M DEV
AUDIO FADER
AU FSC
IR ADJ
AUDIO (AU-182)
CN202


IC201
Y/C PROCESS
IC201 30 REC
0.4Vp-p
H
IC205
AMP
HPF
Q954
BUFFER
Q956, 958
MIX
CN201
VIDEO I/O
TERMINAL BOARD
J201
VIDEO
CN206
EVF Y
EVF (VF-44)
CN203
FSC
CAM Y
CAM C
REG H
SYNC
EVF VDW
DS VDW
DS VDB
EVF VDB
CAMERA (VC-159)
SYNC (IC201 24)
D204
Q232, 236, 238, 242, 247, 266
FILTER
0.5Vp-p
IC201 14 REC
IC201 14 PB
VIDEO 4.9V
Q204
Q262, 264
REC/PB
CHROMA SW
Q261, 268, 252
LOGIC
V MUTE
Q263
Q216
ACK DET
SYNC
EXT C
PB/EE C
IC206
JOG CHROMA PROCESS
PB C IN
C SYNC
FSC IN
C OUT
HD OUT
MODE
SQ ID
JOG SW
Q1507
(IC201 24) SYNC
(IC201 61) FSC
JOG
SYSTEM CONTROL IC505 4
Q253, D201, D214
LOGIC
PAL JOG HD
DOP
DOC*JOG
Q211, 217
V MUTE
Q255
LEVEL SHIFT
*SP/LP
SP/LP (IC505 71)
V MUTE (IC505 47)
JOG (IC505 4)
VA PB MODE (IC505 95)
JOG VD (IC505 3)
V IN/OUT (IC505 93)
SYSTEM CONTROL
IC951
CONVERTER
SI
SCK
D/A CS
CS (IC503 34)
DATA TO SLAVE (IC503 76)
SCK (IC503 77)
CS DA (IC503 37)
SYSTEM CONTROL
VIDEO (2)
SWP
SWP (IC505 97)
VI SYNC (IC505 96)
SERVO
SYNC (IC201 24)
Q219
BUFFER
FSC (IC201 61)
CN202
1.5M DEV
AUDIO FADER
AU FSC
IR ADJ
AUDIO (AU-182)
VIDEO 4.9V
VTR SCK
DATA TO SLVE
VIDEO CS
VI SWP (SERVO IC505 96)
0.3Vp-p
IC206 2 PB
IC206 15 PB
1.8Vp-p
IC206 11 PB

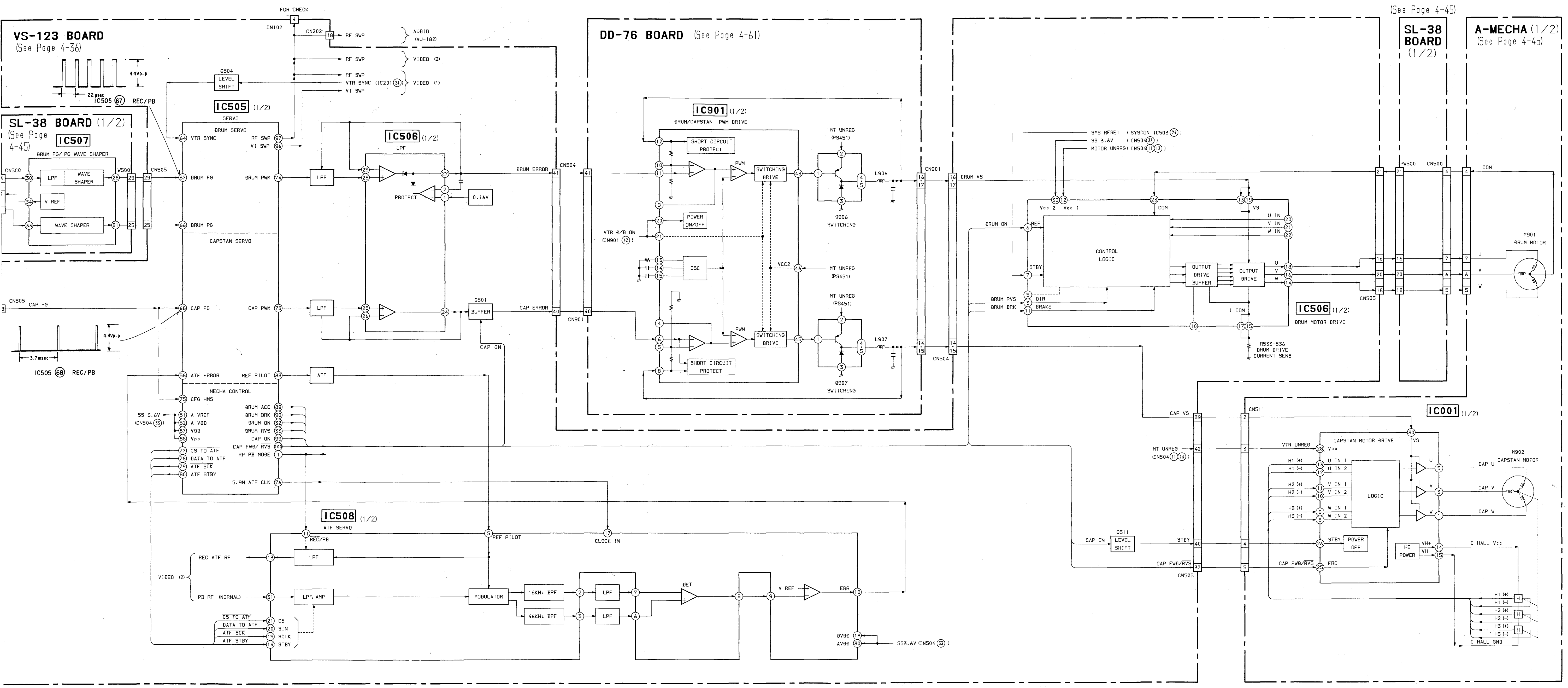
3-4. VIDEO (2) BLOCK DIAGRAM


VS-123 BOARD (See Page 4-27)
CN102
FOR CHECK
2
3
4
6
PB PCM RF
PB RF
RF SWP
REC 2
IC102
REC/PB AMP
RF SWP
MT 2CH
MT 1CH
MT Q
MT FO
VIDEO HEAD CH1
VIDEO HEAD CH1
FLYING ERASE
1CH A (X)
2CH A (X)
FE (X)
CN101
12
PB AMP
VCC
VCC 1CH
VCC 2CH
RP 5V
Q109, 114, 132, 133
FILTER
Q111, 112, 217, 227, 228, D101
FILTER
V MUTE
JOG
AGC
4Vp-p
2.2μsec
IC102 ⑧ ⑭ PB
0.4Vp-p
2.2μsec
IC102 ㉗ ㉞ REC
Q135
RP PB MODE
Q105, D102
MUTE SW
VA PB MODE
V MUTE
RP PB MODE
PCM REC
REC PCM RF
0.36Vp-p
2.2μsec
IC102 ⑥ REC
Q113, 115, 119
FILTER
REC AMP
SW
MIX AMP
0.36Vp-p
H
IC102 ④ REC
2CH CONT
1CH CONT
Q134
RP PB MODE
REC Y
REC LOW
REC C
Q126
BUFFER
Q101-104
ERASE OSC
FE ON
*ME/MP
PB RF
ME/MP (IC505 ㉒)
FE ON (IC505 ②)
RP PB MODE (IC505 ①)
VA PB MODE (IC505 (95))
JOG (IC505 ④)
V MUTE (IC505 ㊼)
SYSTEM CONTROL
RF SWP (IC505 (97))
PB RF (N)
REC ATF RF (IC505 ⑬)
SERVO
PB C RF
PB Y RF
DOP
Ⓒ R (IC951 ⑱)
Ⓓ R (IC951 ⑳)
Ⓔ R (IC951 ㉑)
Ⓕ R (IC951 ㉒)
Ⓐ R (IC951 ⑮)
Ⓑ R (IC951 ⑯)
Ⓛ V (IC951 ㊱)
Ⓜ V (IC951 ㊲)
Ⓙ V (IC951 ⑩)
REC Y RF (IC201 ㊺)
REC C RF (IC201 ⑧)
VIDEO (1)
CN202
8
9
PB RF
REC AFM RF
AUDIO (AU-182)
09

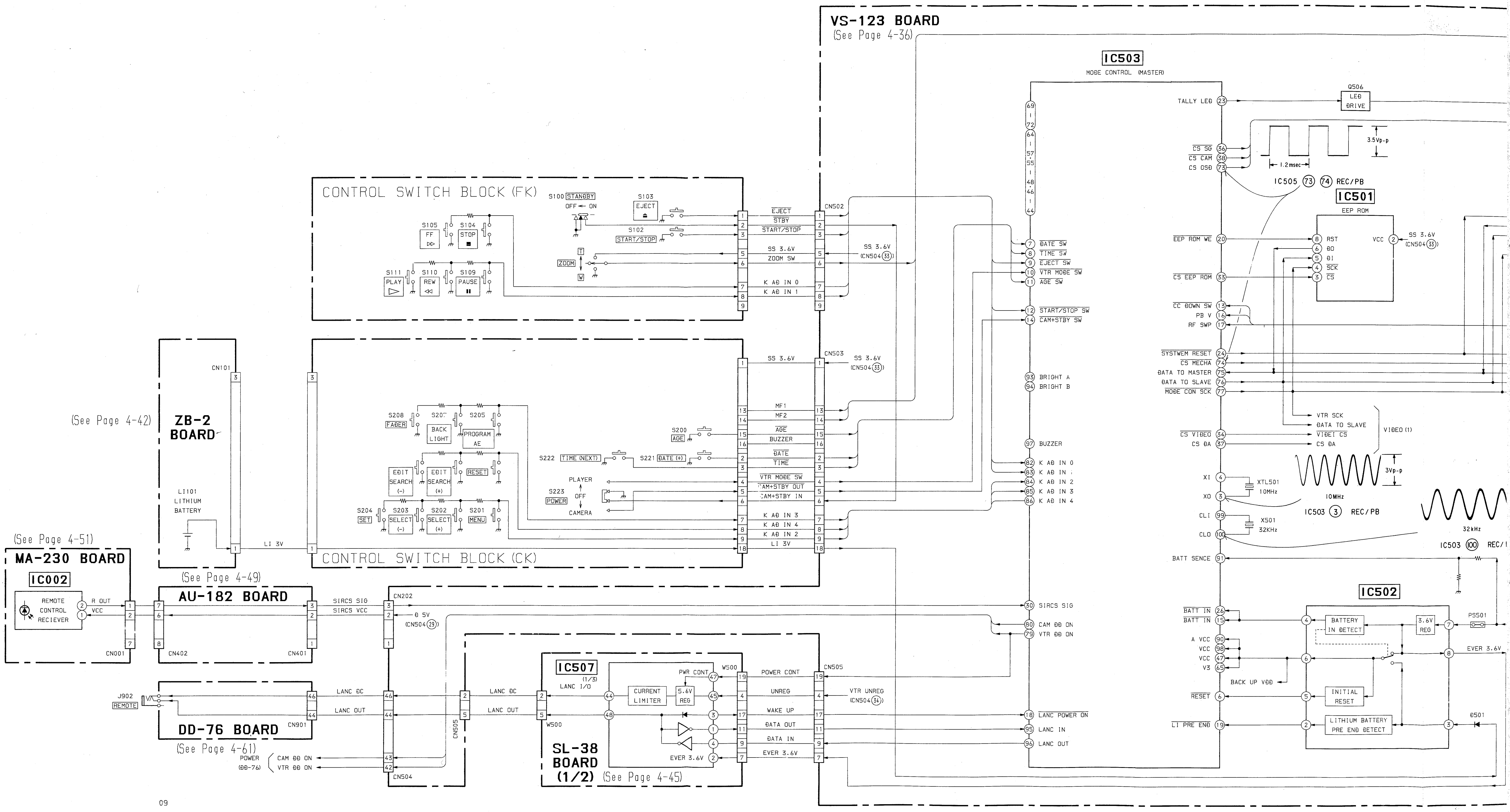
3-5. SERVO BLOCK DIAGRAM


VS-123 BOARD (See Page 4-36)
4.4Vp-p
22 μsec
IC505 (67) REC/PB
A-MECHA (1/2) (See Page 4-45)
DRUM
FG
PG
FG (+)
FG/PG COM
PG (+)
SL-38 BOARD (1/2) (See Page 4-45)
IC507
DRUM FG/ PG WAVE SHAPER
CN500
LPF
WAVE SHAPER
V REF
WAVE SHAPER
W500
CN505
CFG VCC (CN004 ③)
CAPSTAN FG
CFG Vcc
CFG (+)
CFG GND
CFG (−)
IC001 (1/2)
CAPSTAN FG WAVE SHAPER
CN511
CN505
CAP FG
4.4Vp-p
3.7msec
IC505 (68) REC/PB
SS 3.6V (CN504 ㉝)
VIDEO
09

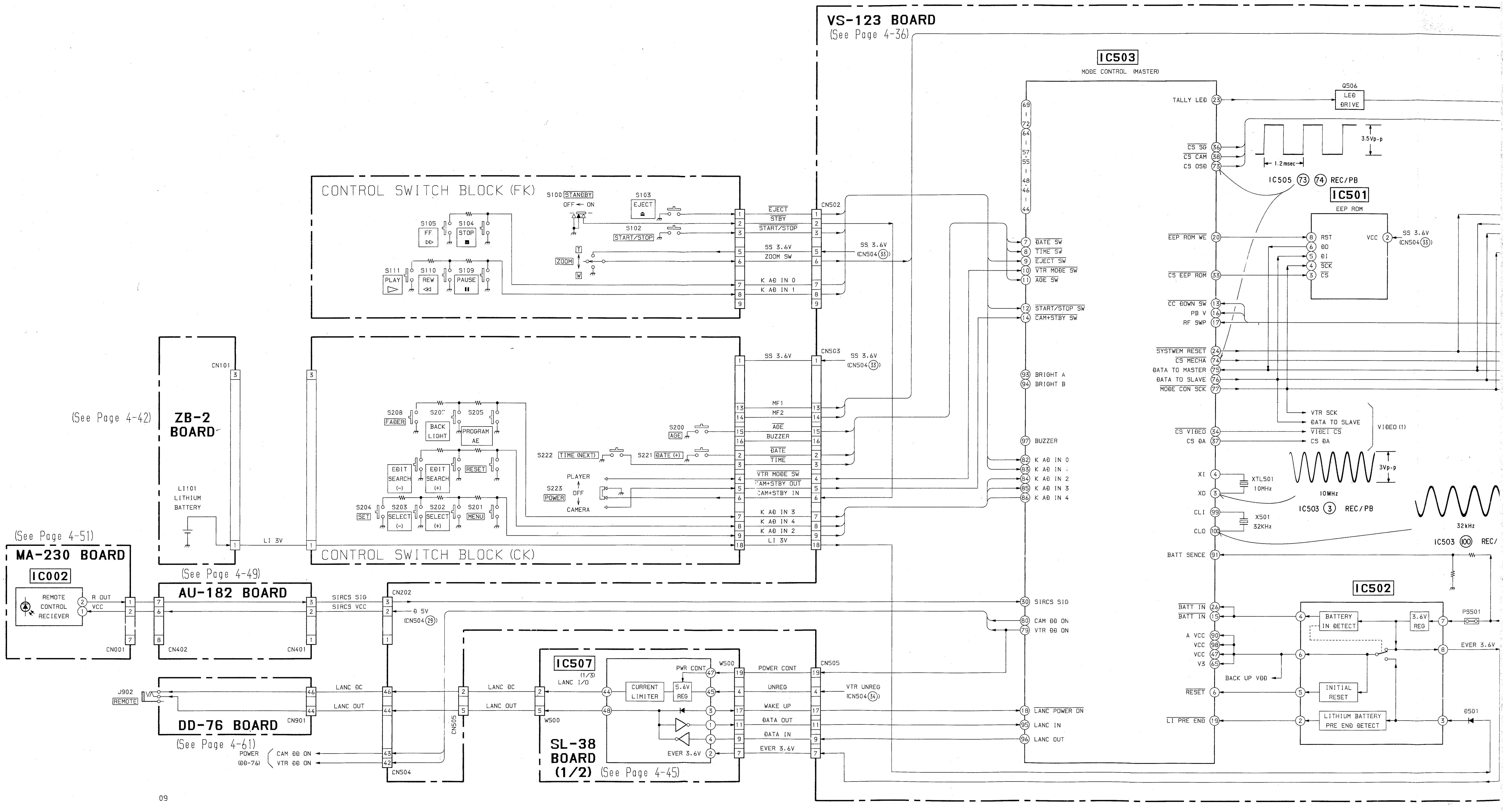
.M


VS-123 BOARD (See Page 4-36)
4.4Vp-p
22 μsec
IC505 67 REC/PB
SL-38 BOARD (1/2) (See Page 4-45)
IC507
DRUM FG/PG WAVE SHAPER
CN500
LPF
WAVE SHAPER
V REF
W500
CN505
CN505 CAP FG
4.4Vp-p
3.7msec
IC505 68 REC/PB
FOR CHECK
CN102
CN202
RF SWP
AUDIO (AU-182)
VIDEO (2)
VTR SYNC (IC201 24)
VI SWP
VIDEO (1)
Q504 LEVEL SHIFT
IC505 (1/2) SERVO
DRUM SERVO
VTR SYNC
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
CAP FG
CAP PWM
ATF ERROR
REF PILOT
MECHA CONTROL
CFG HMS
SS 3.6V (CN504 33)
A VREF
A VDD
VDD
Vpp
CS TO ATF
DATA TO ATF
ATF SCK
ATF STBY
DRUM ACC
DRUM BRK
DRUM ON
DRUM RVS
CAP ON
CAP FWD/RVS
RP PB MODE
5.9M ATF CLK
IC506 (1/2) LPF
PROTECT
0.16V
LPF
ATT
Q501 BUFFER
DRUM ERROR
CAP ERROR
CAP ON
CN504
CN901
DD-76 BOARD (See Page 4-61)
IC901 (1/2) DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
POWER ON/OFF
VTR D/D ON (CN901 42)
OSC
VCC2
MT UNREG (PS451)
Q906 SWITCHING
Q907 SWITCHING
L906
L907
IC508 (1/2) ATF SERVO
REC/PB
REF PILOT
CLOCK IN
REC ATF RF
VIDEO (2)
PB RF (NORMAL)
LPF, AMP
MODULATOR
16KHz BPF
46KHz BPF
DET
V REF
ERR
CS
SIN
SCLK
STBY
DVDD
AVDD
SS3.6V (CN504 33)
DRUM VS
SYS RESET (SYSCON IC503 24)
SS 3.6V (CN504 33)
MOTOR UNREG (CN504 11 13)
Vcc 2
Vcc 1
COM
VS
DRUM ON
REF
STBY
CONTROL LOGIC
U IN
V IN
W IN
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
DRUM RVS
DRUM BRK
DIR
BRAKE
I COM
R533-536 DRUM DRIVE CURRENT SENS
IC506 (1/2) DRUM MOTOR DRIVE
(See Page 4-45)
SL-38 BOARD (1/2)
A-MECHA (1/2) (See Page 4-45)
W500
CN500
M901 DRUM MOTOR
CAP VS
MT UNREG (CN504 11 13)
CN511
CN505
IC001 (1/2)
CAPSTAN MOTOR DRIVE
VTR UNREG
Vcc
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
LOGIC
STBY
POWER OFF
FRC
HE POWER
VH+
VH-
CAP ON
Q511 LEVEL SHIFT
CAP FWD/RVS
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
C HALL Vcc
C HALL GND

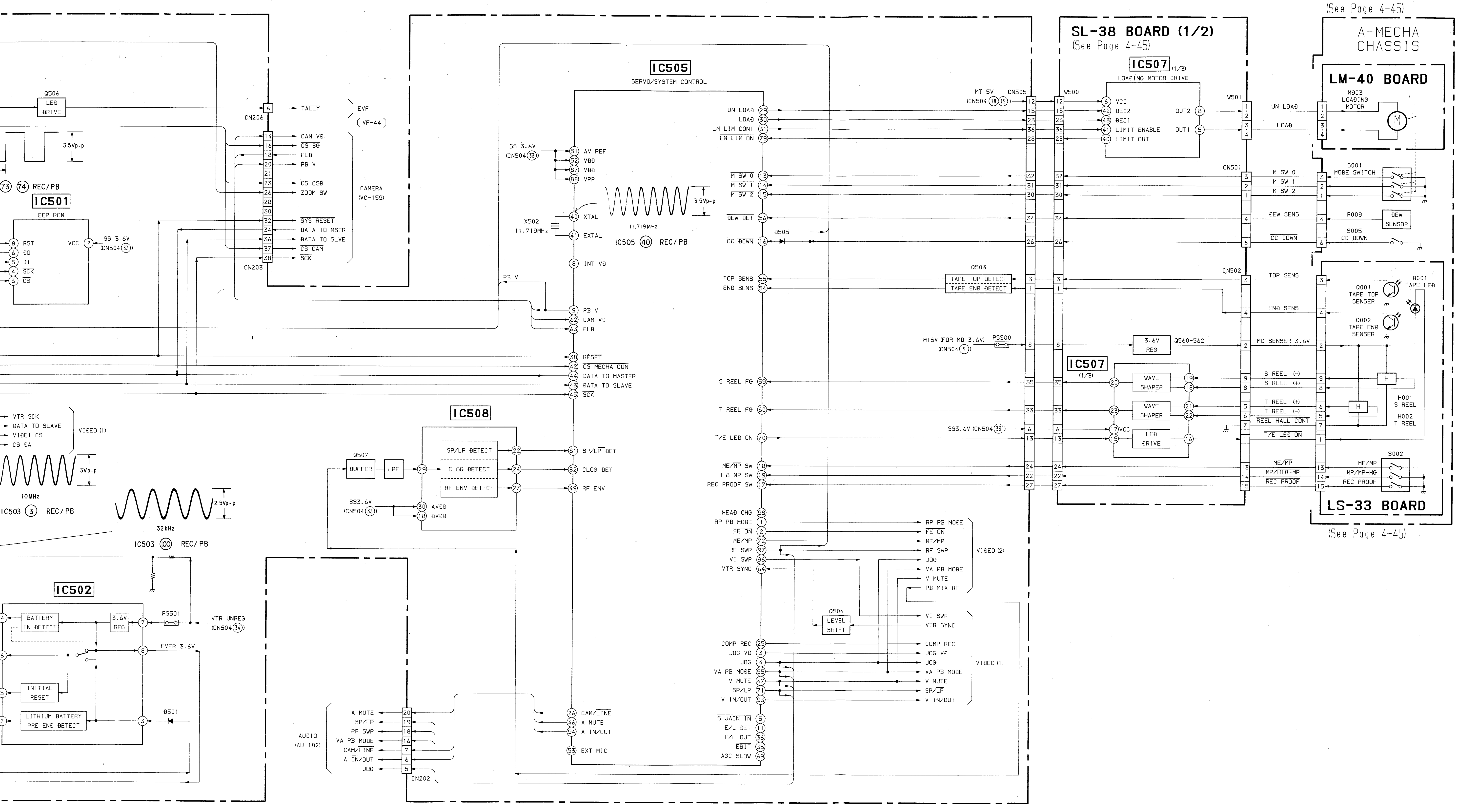
3-6. SYSTEM CONTROL BLOCK DIAGRAM


VS-123 BOARD
(See Page 4-36)
IC503
MODE CONTROL (MASTER)
TALLY LED
Q506
LED DRIVE
CS SG
CS CAM
CS OSD
3.5Vp-p
1.2msec
IC505 (73) (74) REC/PB
IC501
EEP ROM
EEP ROM WE
CS EEP ROM
RST
DO
DI
SCK
CS
VCC
SS 3.6V
(CN504 (33))
CC DOWN SW
PB V
RF SWP
SYSTWEM RESET
CS MECHA
DATA TO MASTER
DATA TO SLAVE
MODE CON SCK
VTR SCK
DATA TO SLAVE
VIDEO CS
CS DA
VIDEO (1)
CS VIDEO
CS DA
X1
XO
XTL501
10MHz
3Vp-p
IC503 (3) REC/PB
CLI
CLO
X501
32KHz
32kHz
IC503 (100) REC/
BATT SENCE
IC502
BATT IN
BATTERY IN DETECT
3.6V REG
PS501
A VCC
VCC
V3
BACK UP VDD
EVER 3.6V
RESET
INITIAL RESET
LI PRE ENB
LITHIUM BATTERY PRE END DETECT
D501
DATE SW
TIME SW
EJECT SW
VTR MODE SW
AGE SW
START/STOP SW
CAM+STBY SW
BRIGHT A
BRIGHT B
BUZZER
K AD IN 0
K AD IN 1
K AD IN 2
K AD IN 3
K AD IN 4
SIRCS SIG
CAM DD ON
VTR DD ON
LANC POWER ON
LANC IN
LANC OUT
CONTROL SWITCH BLOCK (FK)
S100 STANDBY
OFF ON
S103 EJECT
S102 START/STOP
S105 FF
S104 STOP
ZOOM T W
S111 PLAY
S110 REW
S109 PAUSE
EJECT
STBY
START/STOP
SS 3.6V
ZOOM SW
K AD IN 0
K AD IN 1
CN502
CN503
CONTROL SWITCH BLOCK (CK)
S208 FADER
S207 BACK LIGHT
S205 PROGRAM AE
S200 AGE
S222 TIME (NEXT)
S221 DATE (+)
EDIT SEARCH (-)
EDIT SEARCH (+)
RESET
S223 POWER
PLAYER
OFF
CAMERA
S204 SET
S203 SELECT (-)
S202 SELECT (+)
S201 MENU
MF1
MF2
AGE
BUZZER
DATE
TIME
VTR MODE SW
CAM+STBY OUT
CAM+STBY IN
K AD IN 3
K AD IN 4
K AD IN 2
LI 3V
(See Page 4-42)
ZB-2 BOARD
CN101
LI101 LITHIUM BATTERY
LI 3V
(See Page 4-51)
MA-230 BOARD
IC002
REMOTE CONTROL RECIEVER
R OUT
VCC
CN001
(See Page 4-49)
AU-182 BOARD
CN402
CN401
SIRCS SIG
SIRCS VCC
CN202
D 5V
(CN504 (29))
J902 REMOTE
DD-76 BOARD
CN901
(See Page 4-61)
LANC DC
LANC OUT
POWER (DD-76)
CAM DD ON
VTR DD ON
CN504
CN505
IC507
(1/3) LANC I/O
PWR CONT
CURRENT LIMITER
5.6V REG
W500
EVER 3.6V
SL-38 BOARD (1/2)
(See Page 4-45)
POWER CONT
UNREG
WAKE UP
DATA OUT
DATA IN
EVER 3.6V
VTR UNREG
(CN504 (34))
09

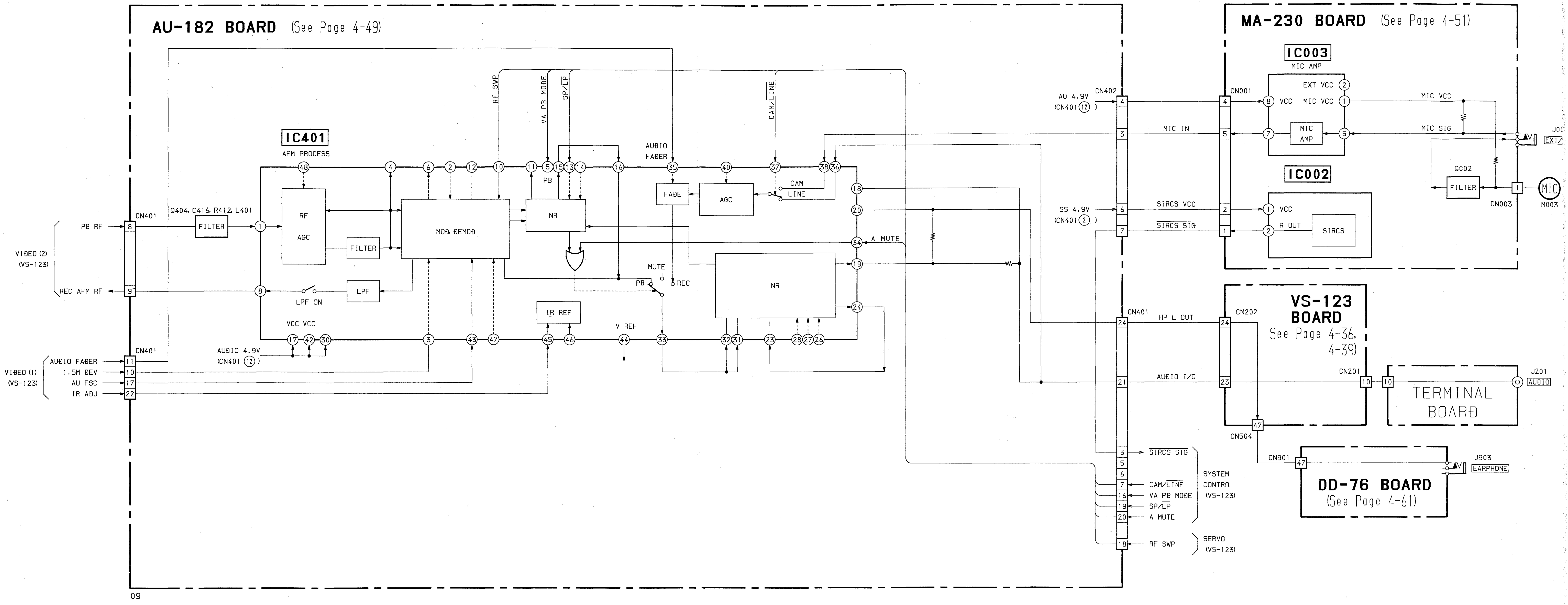
3-6. SYSTEM CONTROL BLOCK DIAGRAM



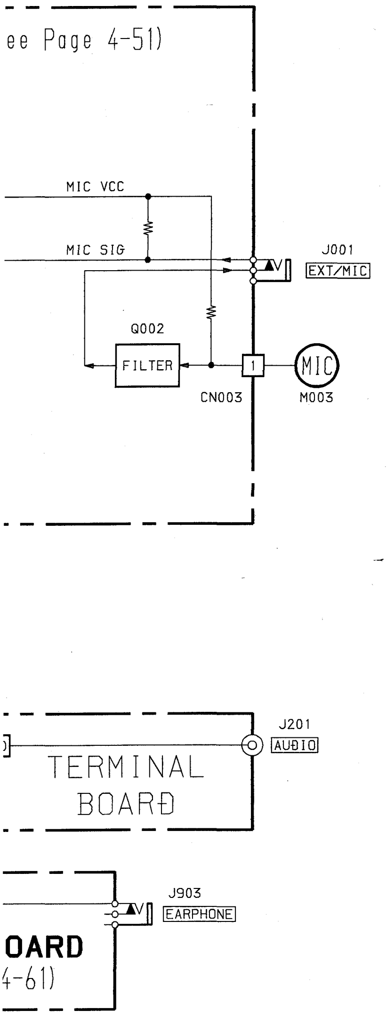
VS-123 BOARD
(See Page 4-36)
IC503
MODE CONTROL (MASTER)
TALLY LED
Q506
LED DRIVE
CS SG
CS CAM
CS OSD
3.5Vp-p
1.2msec
IC505 73 74 REC/PB
IC501
EEP ROM
RST
DO
DI
SCK
CS
VCC
SS 3.6V (CN504 33)
EEP ROM WE
CS EEP ROM
CC DOWN SW
PB V
RF SWP
SYSTEM RESET
CS MECHA
DATA TO MASTER
DATA TO SLAVE
MODE CON SCK
VTR SCK
DATA TO SLAVE
VIDEO CS
CS DA
VIDEO (1)
CS VIDEO
CS DA
XI
XO
XTL501 10MHz
3Vp-p
10MHz
IC503 3 REC/PB
CLI
CLO
X501 32KHz
32kHz
IC503 100 REC/
BATT SENCE
IC502
BATTERY IN DETECT
3.6V REG
PS501
EVER 3.6V
BATT IN
A VCC
VCC
VCC
V3
BACK UP VDD
RESET
INITIAL RESET
LI PRE END
LITHIUM BATTERY PRE END DETECT
D501
DATE SW
TIME SW
EJECT SW
VTR MODE SW
AGE SW
START/STOP SW
CAM+STBY SW
BRIGHT A
BRIGHT B
BUZZER
K AD IN 0
K AD IN 1
K AD IN 2
K AD IN 3
K AD IN 4
SIRCS SIG
CAM DD ON
VTR DD ON
LANC POWER ON
LANC IN
LANC OUT
CONTROL SWITCH BLOCK (FK)
S100 STANDBY
OFF ← ON
S103 EJECT
S102 START/STOP
S105 FF
S104 STOP
S111 PLAY
S110 REW
S109 PAUSE
ZOOM T W
CN502
EJECT
STBY
START/STOP
SS 3.6V
ZOOM SW
K AD IN 0
K AD IN 1
SS 3.6V (CN504 33)
CONTROL SWITCH BLOCK (CK)
S208 FADER
S207 BACK LIGHT
S205 PROGRAM AE
S200 AGE
S222 TIME (NEXT)
S221 DATE (+)
EDIT SEARCH (−)
EDIT SEARCH (+)
RESET
S223 POWER
PLAYER
OFF
CAMERA
S204 SET
S203 SELECT (−)
S202 SELECT (+)
S201 MENU
CN503
SS 3.6V
MF1
MF2
AGE
BUZZER
DATE
TIME
VTR MODE SW
CAM+STBY OUT
CAM+STBY IN
K AD IN 3
K AD IN 4
K AD IN 2
LI 3V
SS 3.6V (CN504 33)
(See Page 4-42)
ZB-2 BOARD
CN101
LI101 LITHIUM BATTERY
LI 3V
(See Page 4-51)
MA-230 BOARD
IC002
REMOTE CONTROL RECIEVER
R OUT
VCC
CN001
(See Page 4-49)
AU-182 BOARD
CN402
CN401
SIRCS SIG
SIRCS VCC
CN202
D 5V (CN504 29)
J902 REMOTE
DD-76 BOARD
CN901
(See Page 4-61)
LANC DC
LANC OUT
POWER (DD-76)
CAM DD ON
VTR DD ON
CN504
CN505
IC507
(1/3) LANC I/O
PWR CONT
CURRENT LIMITER
5.6V REG
EVER 3.6V
W500
SL-38 BOARD (1/2)
(See Page 4-45)
POWER CONT
UNREG
WAKE UP
DATA OUT
DATA IN
EVER 3.6V
VTR UNREG (CN504 34)
09


IC505
SERVO/SYSTEM CONTROL
IC507 (1/3)
LOADING MOTOR DRIVE
IC507 (1/3)
IC508
IC501
EEP ROM
IC502
SL-38 BOARD (1/2)
(See Page 4-45)
A-MECHA CHASSIS
(See Page 4-45)
LM-40 BOARD
LS-33 BOARD
(See Page 4-45)
Q506 LED DRIVE
CN206
TALLY
EVF (VF-44)
CN203
CAM VD
CS SG
FLD
PB V
CS OSD
ZOOM SW
SYS RESET
DATA TO MSTR
DATA TO SLVE
CS CAM
SCK
CAMERA (VC-159)
3.5Vp-p
73 74 REC/PB
RST
DO
DI
SCK
CS
VCC
SS 3.6V (CN504 33)
VTR SCK
DATA TO SLAVE
VIDEI CS
CS DA
VIDEO (1)
3Vp-p
10MHz
IC503 3 REC/PB
2.5Vp-p
32kHz
IC503 100 REC/PB
BATTERY IN DETECT
3.6V REG
PS501
VTR UNREG (CN504 34)
EVER 3.6V
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
D501
SS 3.6V (CN504 33)
AV REF
VDD
VPP
X502 11.719MHz
XTAL
EXTAL
11.719MHz
3.5Vp-p
IC505 40 REC/PB
INT VD
PB V
CAM VD
FLD
RESET
CS MECHA CON
DATA TO MASTER
DATA TO SLAVE
SCK
Q507 BUFFER
LPF
SP/LP DETECT
CLOG DETECT
RF ENV DETECT
SP/LP DET
CLOG DET
RF ENV
SS3.6V (CN504 33)
AVDD
DVDD
AUDIO (AU-182)
A MUTE
SP/LP
RF SWP
VA PB MODE
CAM/LINE
A IN/OUT
JOG
CN202
CAM/LINE
A MUTE
A IN/OUT
EXT MIC
UN LOAD
LOAD
LM LIM CONT
LM LIM ON
M SW 0
M SW 1
M SW 2
DEW DET
CC DOWN
D505
TOP SENS
END SENS
Q503
TAPE TOP DETECT
TAPE END DETECT
MTSV (FOR MD 3.6V) (CN504 9)
PS500
S REEL FG
T REEL FG
T/E LED ON
SS3.6V (CN504 33)
ME/MP SW
HI8 MP SW
REC PROOF SW
HEAD CHG
RP PB MODE
FE ON
ME/MP
RF SWP
VI SWP
VTR SYNC
VIDEO (2)
JOG
VA PB MODE
V MUTE
PB MIX RF
Q504 LEVEL SHIFT
COMP REC
JOG VD
JOG
VA PB MODE
V MUTE
SP/LP
V IN/OUT
VIDEO (1)
S JACK IN
E/L DET
E/L OUT
EDIT
AGC SLOW
MT 5V (CN504 18 19)
CN505
W500
VCC
DEC2
DEC1
LIMIT ENABLE
LIMIT OUT
OUT2
OUT1
W501
UN LOAD
LOAD
M903 LOADING MOTOR
CN501
M SW 0
M SW 1
M SW 2
S001 MODE SWITCH
DEW SENS
R009
DEW SENSOR
CC DOWN
S005 CC DOWN
CN502
TOP SENS
END SENS
Q001 TAPE TOP SENSER
D001 TAPE LED
Q002 TAPE END SENSER
3.6V REG
Q560-562
MD SENSER 3.6V
WAVE SHAPER
WAVE SHAPER
LED DRIVE
VCC
S REEL (-)
S REEL (+)
T REEL (+)
T REEL (-)
REEL HALL CONT
T/E LED ON
H001 S REEL
H002 T REEL
ME/MP
MP/HI8-MP
REC PROOF
S002
ME/MP
MP/MP-HG
REC PROOF

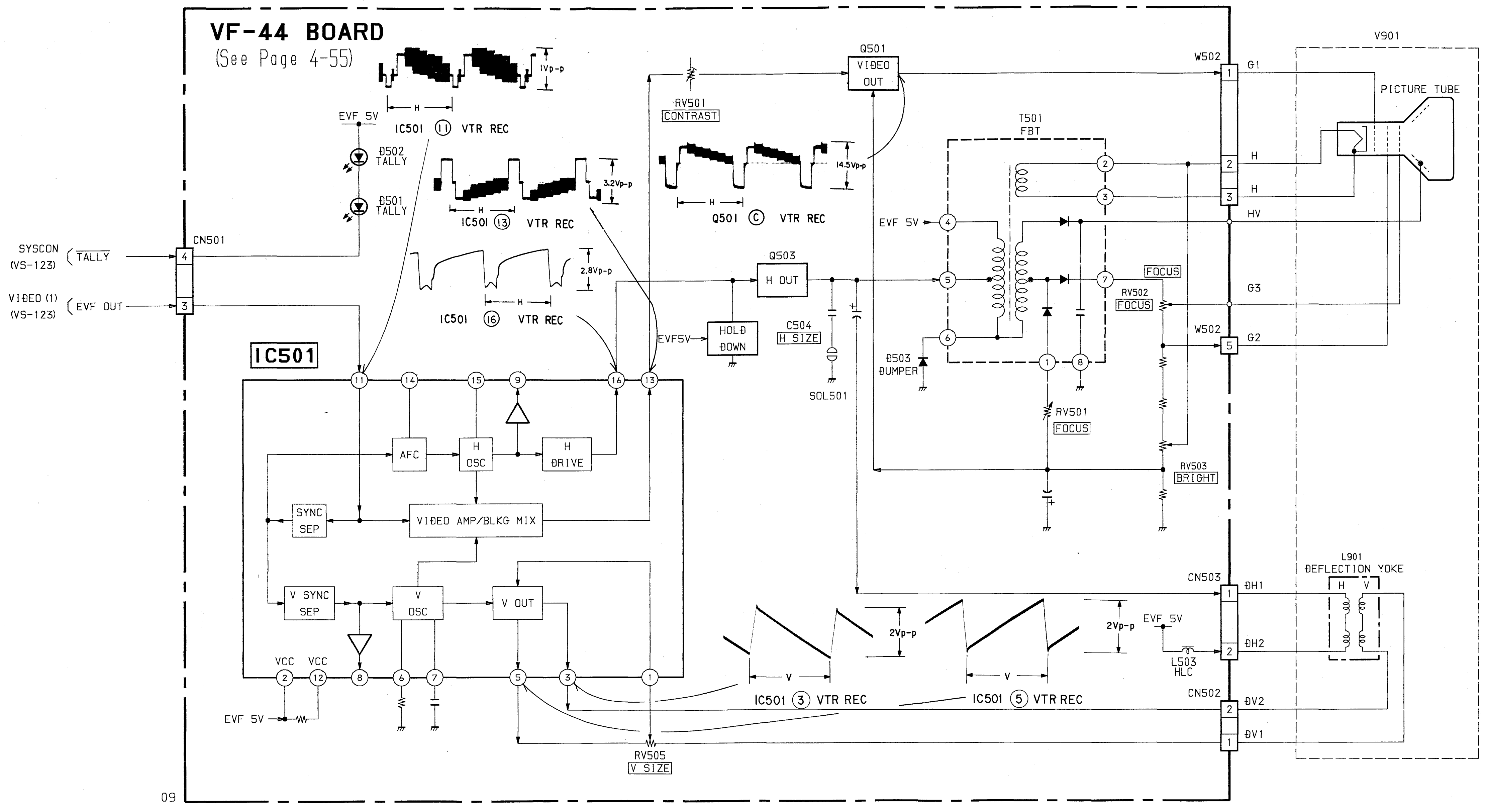
3-7. AUDIO BLOCK DIAGRAM


AU-182 BOARD (See Page 4-49)
IC401
AFM PROCESS
RF AGC
FILTER
MOD, DEMOD
NR
PB
LPF
LPF ON
IR REF
V REF
VCC VCC
AUDIO 4.9V (CN401 ⑫)
AUDIO FADER
FADE
AGC
CAM
LINE
MUTE
PB
REC
A MUTE
RF SWP
VA PB MODE
SP/LP
CAM/LINE
CN401
Q404, C416, R412, L401
FILTER
PB RF
REC AFM RF
VIDEO (2) (VS-123)
AUDIO FADER
1.5M DEV
AU FSC
IR ADJ
VIDEO (1) (VS-123)
AU 4.9V (CN401 ⑫)
SS 4.9V (CN401 ②)
CN402
MIC IN
SIRCS VCC
SIRCS SIG
CN401
HP L OUT
AUDIO I/O
SIRCS SIG
CAM/LINE
VA PB MODE
SP/LP
A MUTE
RF SWP
SYSTEM CONTROL (VS-123)
SERVO (VS-123)
MA-230 BOARD (See Page 4-51)
IC003
MIC AMP
CN001
EXT VCC
VCC
MIC VCC
MIC AMP
MIC VCC
MIC SIG
J001
EXT/
Q002
FILTER
CN003
MIC
M003
IC002
VCC
R OUT
SIRCS
VS-123 BOARD
See Page 4-36, 4-39)
CN202
CN201
CN504
TERMINAL BOARD
J201
AUDIO
CN901
DD-76 BOARD
(See Page 4-61)
J903
EARPHONE
09

3-8. B/W EVF BLOCK DIAGRAM

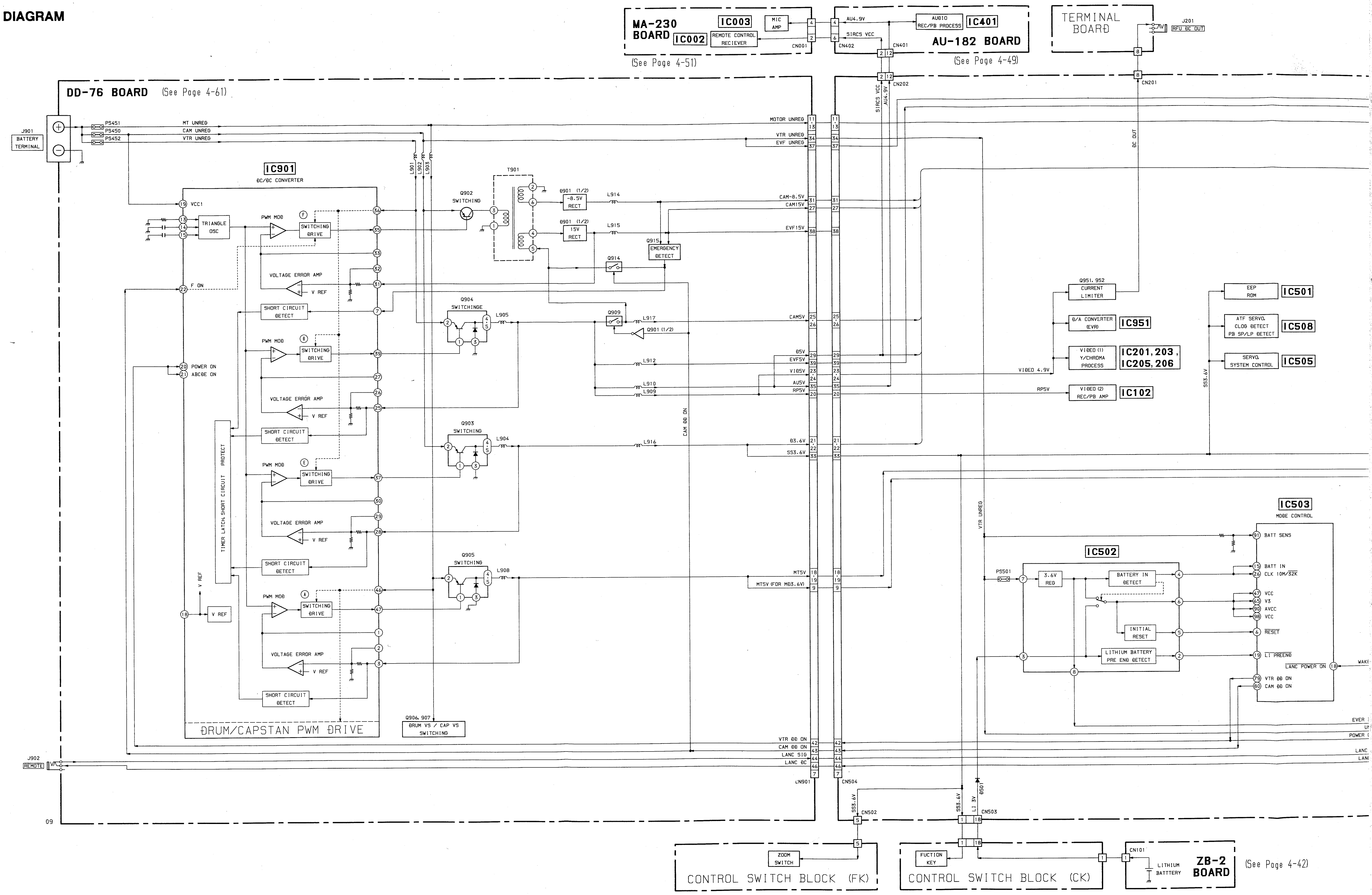


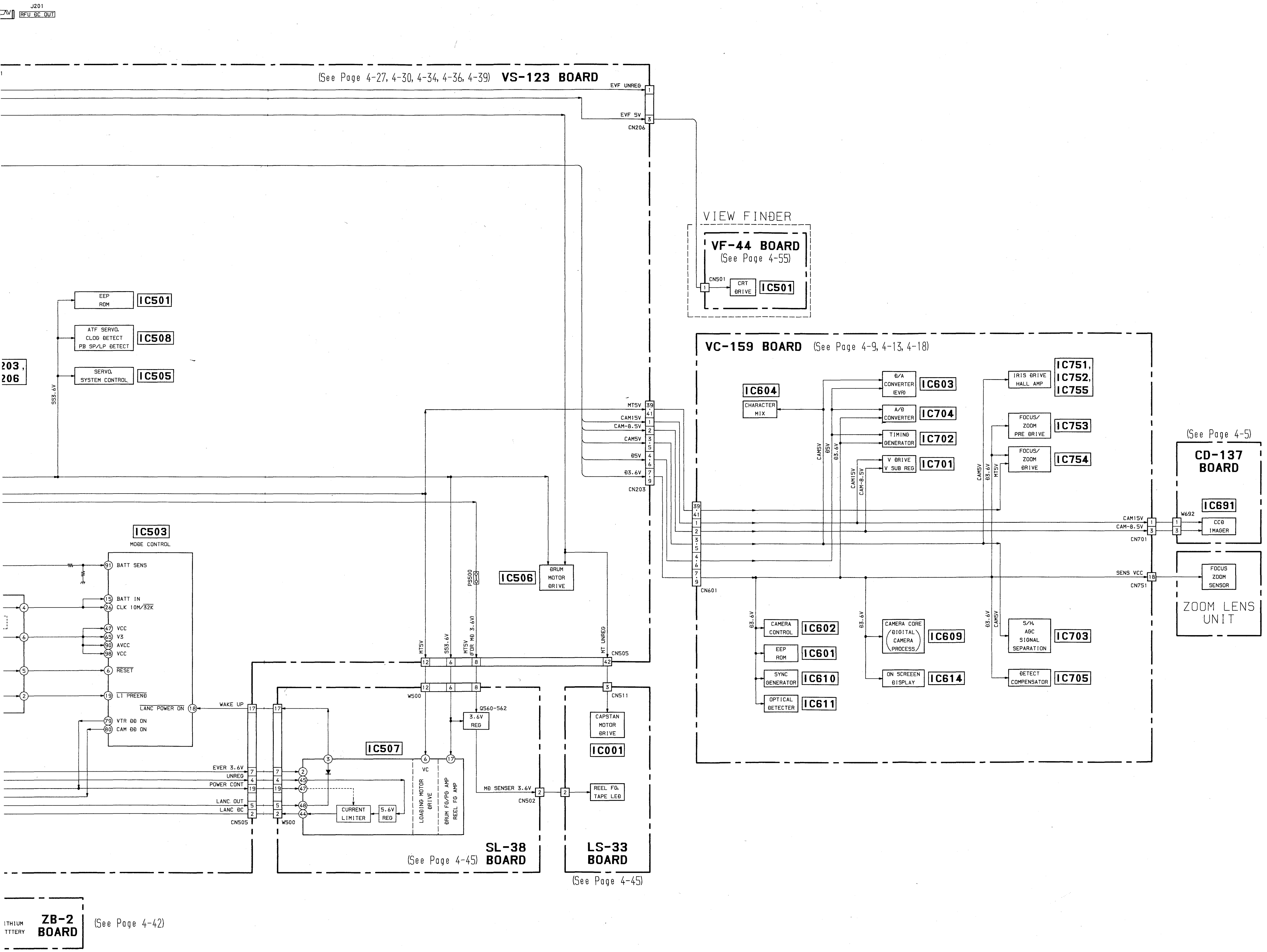
ee Page 4-51)
MIC VCC
MIC SIG
J001
EXT/MIC
Q002
FILTER
1
CN003
MIC
M003
J201
AUDIO
TERMINAL
BOARD
J903
EARPHONE
OARD
4-61)



VF-44 BOARD
(See Page 4-55)
1Vp-p
H
IC501 ⑪ VTR REC
EVF 5V
D502
TALLY
D501
TALLY
3.2Vp-p
H
IC501 ⑬ VTR REC
2.8Vp-p
H
IC501 ⑯ VTR REC
SYSCON
(VS-123)
TALLY
VIDEO (1)
(VS-123)
EVF OUT
CN501
4
3
IC501
11
14
15
9
16
13
AFC
H
OSC
H
DRIVE
SYNC
SEP
VIDEO AMP/BLKG MIX
V SYNC
SEP
V
OSC
V OUT
VCC
VCC
2
12
8
6
7
5
3
1
EVF 5V
RV505
V SIZE
09
RV501
CONTRAST
Q501
VIDEO
OUT
14.5Vp-p
H
Q501 Ⓒ VTR REC
Q503
H OUT
EVF5V
HOLD
DOWN
C504
H SIZE
SOL501
D503
DUMPER
T501
FBT
EVF 5V
2
3
4
5
6
7
1
8
FOCUS
RV502
FOCUS
RV501
FOCUS
RV503
BRIGHT
W502
1
2
3
5
W502
G1
H
H
HV
G3
G2
V901
PICTURE TUBE
2Vp-p
V
IC501 ③ VTR REC
V
IC501 ⑤ VTR REC
2Vp-p
EVF 5V
L503
HLC
CN503
1
2
DH1
DH2
CN502
2
1
DV2
DV1
L901
DEFLECTION YOKE
H
V

3-9. POWER BLOCK DIAGRAM

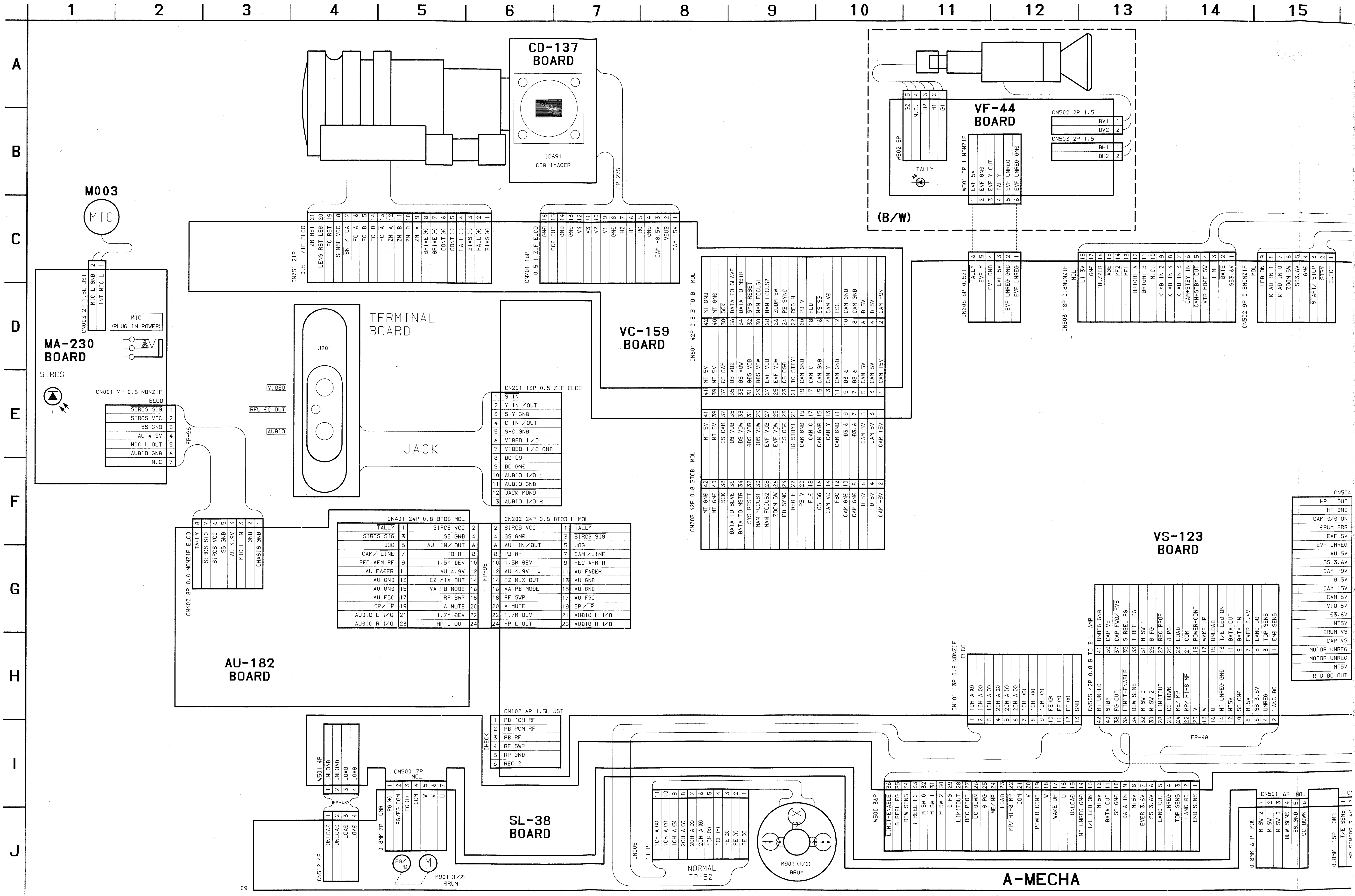

MA-230 BOARD
IC003
IC002
MIC AMP
REMOTE CONTROL RECIEVER
CN001
(See Page 4-51)
AU-182 BOARD
AU4.9V
AUDIO REC/PB PROCESS
IC401
SIRCS VCC
CN402
CN401
(See Page 4-49)
TERMINAL BOARD
J201
RFU DC OUT
CN201
CN202
DD-76 BOARD (See Page 4-61)
J901
BATTERY TERMINAL
PS451
PS450
PS452
MT UNREG
CAM UNREG
VTR UNREG
IC901
DC/DC CONVERTER
VCC1
TRIANGLE OSC
PWM MOD
SWITCHING DRIVE
VOLTAGE ERROR AMP
V REF
SHORT CIRCUIT DETECT
F ON
POWER ON
ABCDE ON
TIMER LATCH SHORT CIRCUIT PROTECT
DRUM/CAPSTAN PWM DRIVE
Q902
SWITCHING
T901
L901
L902
L903
D901 (1/2)
-8.5V RECT
15V RECT
L914
L915
Q915
EMERGENCY DETECT
Q914
Q904
SWITCHINGE
L905
Q909
L917
Q901 (1/2)
L912
L910
L909
Q903
SWITCHING
L904
L916
CAM DD ON
Q905
SWITCHING
L908
Q906, 907
DRUM VS / CAP VS SWITCHING
MOTOR UNREG
VTR UNREG
EVF UNREG
CAM-8.5V
CAM15V
EVF15V
CAM5V
D5V
EVF5V
VIDEO5V
AU5V
RP5V
D3.6V
SS3.6V
MT5V
MT5V (FOR MD3.6V)
VTR DD ON
CAM DD ON
LANC SIG
LANC DC
CN901
CN504
J902
REMOTE
SIRCS VCC
AU4.9V
DC OUT
Q951, 952
CURRENT LIMITER
D/A CONVERTER (EVR)
IC951
VIDEO (1) Y/CHROMA PROCESS
IC201, 203, IC205, 206
VIDEO 4.9V
RP5V
VIDEO (2) REC/PB AMP
IC102
EEP ROM
IC501
ATF SERVO, CLOG DETECT PB SP/LP DETECT
IC508
SERVO, SYSTEM CONTROL
IC505
SS3.6V
VTR UNREG
IC503
MODE CONTROL
BATT SENS
IC502
PS501
3.6V REG
BATTERY IN DETECT
INITIAL RESET
LITHIUM BATTERY PRE END DETECT
BATT IN
CLK 10M/32K
VCC
V3
AVCC
VCC
RESET
LI PREEND
LANC POWER ON
VTR DD ON
CAM DD ON
D501
SS3.6V
LI 3V
CN502
CN503
ZOOM SWITCH
CONTROL SWITCH BLOCK (FK)
FUCTION KEY
CONTROL SWITCH BLOCK (CK)
CN101
LITHIUM BATTERY
ZB-2 BOARD
(See Page 4-42)


J201
RFU DC OUT
(See Page 4-27, 4-30, 4-34, 4-36, 4-39) VS-123 BOARD
EVF UNREG
EVF 5V
CN206
VIEW FINDER
VF-44 BOARD
(See Page 4-55)
CN501
CRT DRIVE
IC501
EEP ROM
IC501
ATF SERVO, CLOG DETECT PB SP/LP DETECT
IC508
SERVO, SYSTEM CONTROL
IC505
203, 206
SS3.6V
MT5V
CAM15V
CAM-8.5V
CAM5V
D5V
D3.6V
CN203
VC-159 BOARD (See Page 4-9, 4-13, 4-18)
IC604
CHARACTER MIX
D/A CONVERTER (EVR)
IC603
A/D CONVERTER
IC704
TIMING GENERATOR
IC702
V DRIVE V SUB REG
IC701
IRIS DRIVE HALL AMP
IC751, IC752, IC755
FOCUS/ ZOOM PRE DRIVE
IC753
FOCUS/ ZOOM DRIVE
IC754
(See Page 4-5)
CD-137 BOARD
IC691
CCD IMAGER
W692
CAM15V
CAM-8.5V
CN701
SENS VCC
CN751
FOCUS ZOOM SENSOR
ZOOM LENS UNIT
CN601
CAMERA CONTROL
IC602
EEP ROM
IC601
SYNC GENERATOR
IC610
OPTICAL DETECTER
IC611
CAMERA CORE (DIGITAL CAMERA PROCESS)
IC609
ON SCREEN DISPLAY
IC614
S/H, AGC SIGNAL SEPARATION
IC703
DETECT COMPENSATOR
IC705
IC503
MODE CONTROL
BATT SENS
BATT IN
CLK 10M/32K
VCC
V3
AVCC
VCC
RESET
LI PREEND
LANC POWER ON
VTR DD ON
CAM DD ON
WAKE UP
IC506
DRUM MOTOR DRIVE
PS500
MT5V
SS3.6V
MT5V (FOR MD 3.6V)
MT UNREG
CN505
W500
Q560-562
3.6V REG
IC507
VC
LOADING MOTOR DRIVE
DRUM FG/PG AMP
REEL FG AMP
CURRENT LIMITER
5.6V REG
EVER 3.6V
UNREG
POWER CONT
LANC OUT
LANC DC
CN505
W500
MD SENSER 3.6V
CN502
SL-38 BOARD
(See Page 4-45)
CN511
CAPSTAN MOTOR DRIVE
IC001
REEL FG, TAPE LED
LS-33 BOARD
(See Page 4-45)
LITHIUM BATTERY
ZB-2 BOARD
(See Page 4-42)

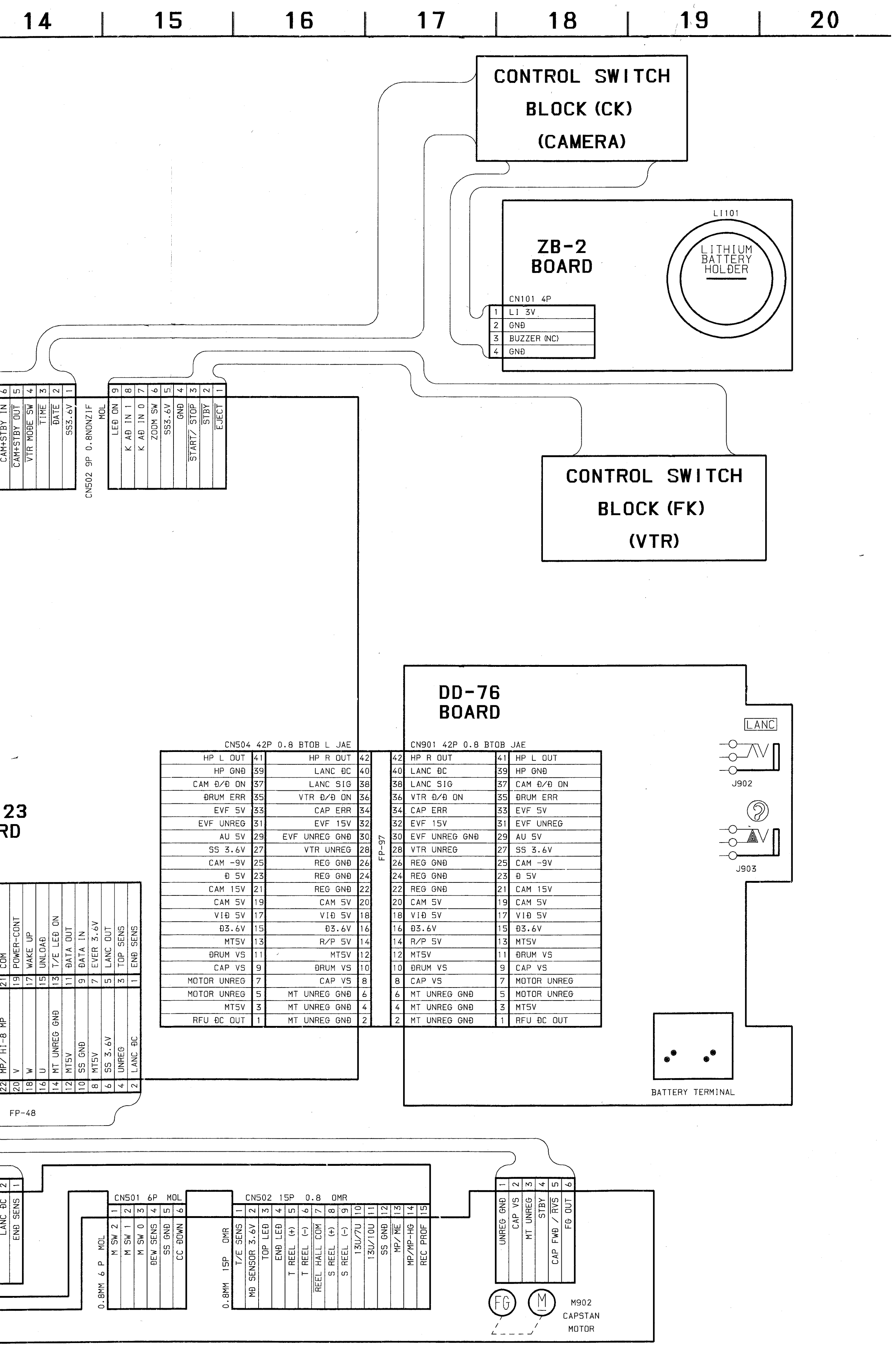
SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
CD-137 BOARD
IC691 CCD IMAGER
FP-275
VF-44 BOARD
(B/W)
TALLY
W502 5P
W501 5P 1 NONZIF
CN502 2P 1.5
CN503 2P 1.5
M003
MIC
MA-230 BOARD
SIRCS
CN003 2P 1.5L JST
MIC (PLUG IN POWER)
CN001 7P 0.8 NONZIF ELCO
FP-96
CN751 21P 0.5 I ZIF ELCO
CN701 16P 0.5 I ZIF ELCO
TERMINAL BOARD
J201
JACK
VIDEO
RFU DC OUT
AUDIO
CN201 13P 0.5 ZIF ELCO
VC-159 BOARD
CN601 42P 0.8 B TO B MOL
CN203 42P 0.8 BTOB MOL
CN206 6P 0.5ZIF
CN503 18P 0.8NONZIF MOL
CN502 9P 0.8NONZIF MOL
VS-123 BOARD
CN504
CN402 8P 0.8 NONZIF ELCO
CN401 24P 0.8 BTOB MOL
CN202 24P 0.8 BTOB L MOL
FP-95
AU-182 BOARD
CN101 13P 0.8 NONZIF ELCO
CN505 42P 0.8 B TO B L AMP
FP-48
CN102 6P 1.5L JST
CHECK
W501 4P
FP-487
CN512 4P
CN500 7P MOL
0.8MM 7P OMR
FG/PG
M
M901 (1/2) DRUM
SL-38 BOARD
CN005 11 P
NORMAL FP-52
M901 (1/2) DRUM
W500 36P
A-MECHA
CN501 6P MOL
0.8MM 6 P MOL
0.8MM 15P OMR
09


14
15
16
17
18
19
20
CONTROL SWITCH BLOCK (CK) (CAMERA)
ZB-2 BOARD
LI101
LITHIUM BATTERY HOLDER
CN101 4P
1 LI 3V
2 GND
3 BUZZER (NC)
4 GND
CN502 9P 0.8NDNZIF MOL
CONTROL SWITCH BLOCK (FK) (VTR)
DD-76 BOARD
CN504 42P 0.8 BTOB L JAE
CN901 42P 0.8 BTOB JAE
FP-97
LANC
J902
J903
BATTERY TERMINAL
23
RD
FP-48
CN501 6P MOL
CN502 15P 0.8 OMR
M902
CAPSTAN MOTOR
FG
M

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enables seeing.
  (The other layers'patterns are not indicated.)
- Circled numbers refer to waveforms.
- (B) or (F), etc. of capacitors indicate the temperature characteristics.
- ○ : Through hole .

* Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W or 1/16W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repeair.*
- ━━ : B+ Line.*
- ‒ ‒ ‒ : B– Line.*
- ⇛ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note:
The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

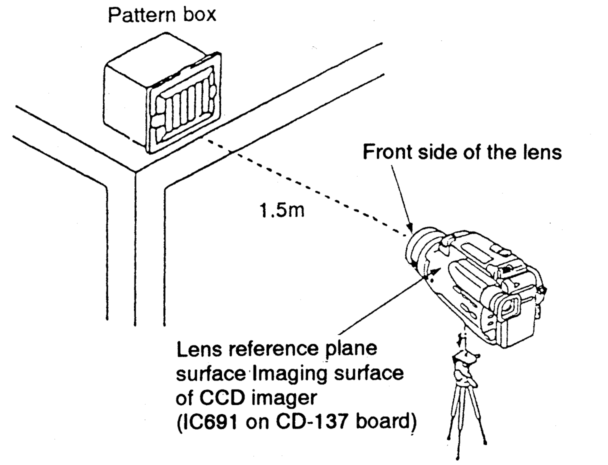
*: indicated by the color red.

- **Measuring conditions voltage value and waveform.**

(CAMERA REC mode)

- The object is color bar chart of pattern box.*
- Voltages are dc between ground and measurement points.*
  Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
Front side of the lens
1.5m
Lens reference plane surface Imaging surface of CCD imager (IC691 on CD-137 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

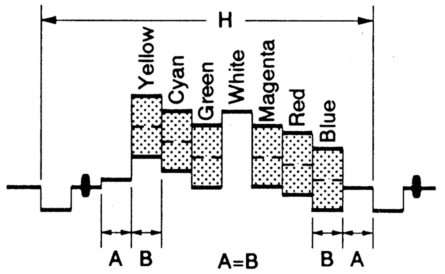

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output terminal output waveform)

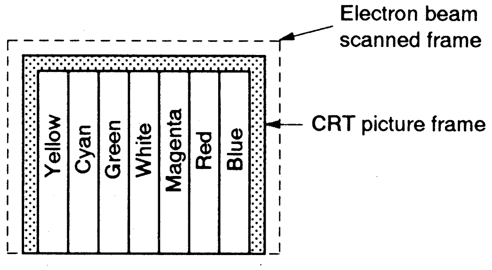

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

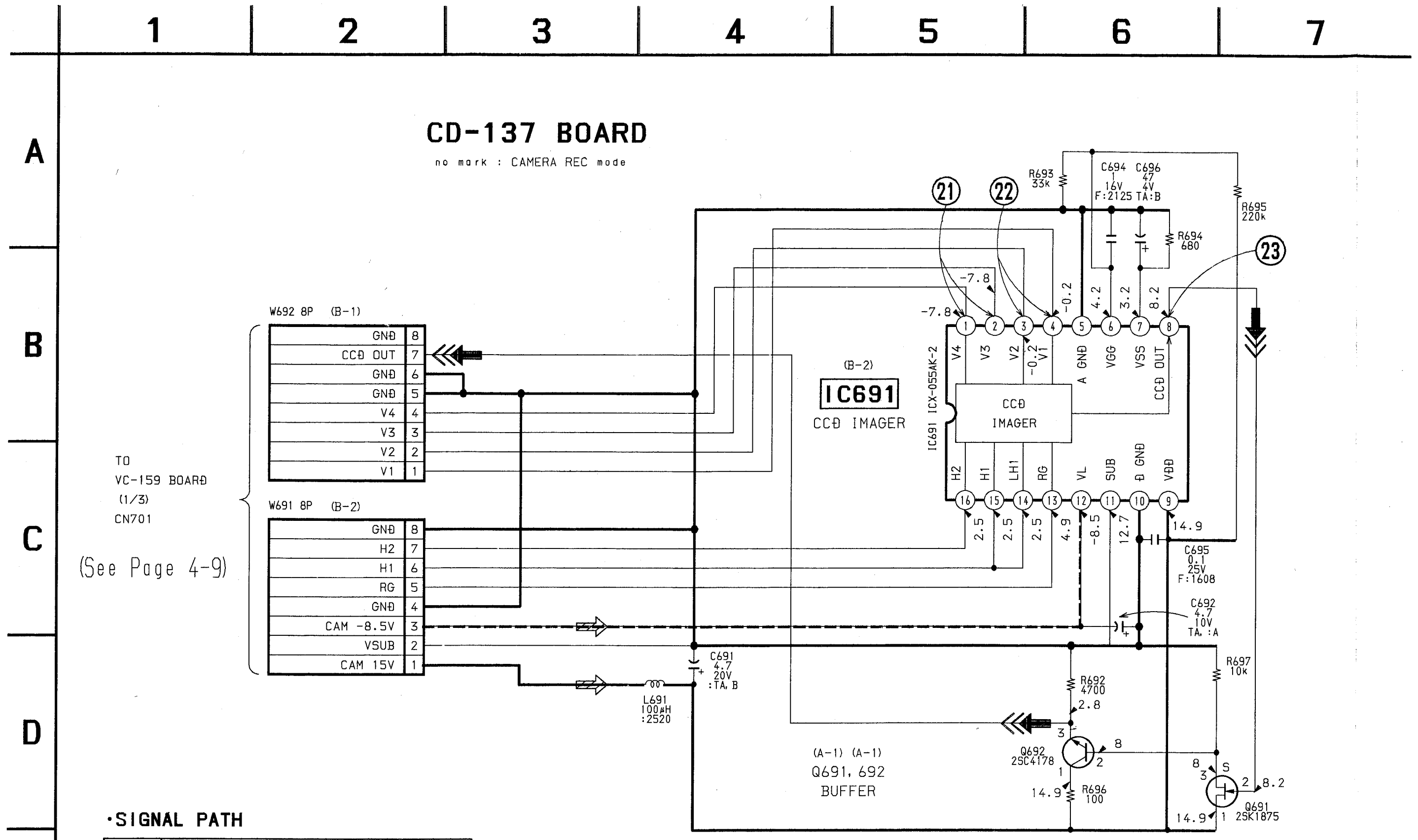
(REC/PB mode)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

NOTE: Refer to "3-1-3. Connecting the Equlpments" in VIDEO SECTION ADJUSTMENT. (See Page 7-29).

CD-137 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-137 BOARD: 1,000 series —

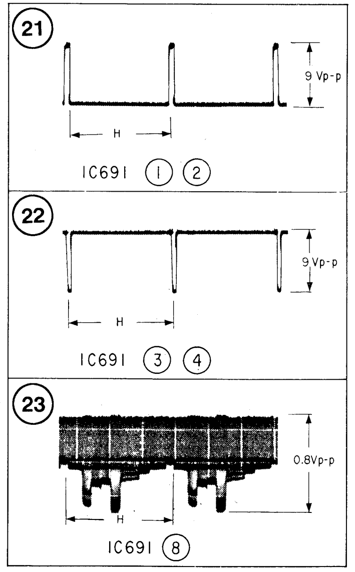

1
2
3
4
5
6
7
A
B
C
D
E
CD-137 BOARD
no mark : CAMERA REC mode
W692 8P (B-1)
GND 8
CCD OUT 7
GND 6
GND 5
V4 4
V3 3
V2 2
V1 1
TO
VC-159 BOARD
(1/3)
CN701
(See Page 4-9)
W691 8P (B-2)
GND 8
H2 7
H1 6
RG 5
GND 4
CAM -8.5V 3
VSUB 2
CAM 15V 1
(B-2)
IC691
CCD IMAGER
IC691 ICX-055AK-2
CCD
IMAGER
V4
V3
V2
V1
A GND
VGG
VSS
CCD OUT
H2
H1
LH1
RG
VL
SUB
Ð GND
VDD
-7.8
-7.8
-0.2
-0.2
4.2
3.2
8.2
2.5
2.5
2.5
4.9
-8.5
12.7
14.9
21
22
23
R693
33k
C694
1
16V
F:2125
C696
47
4V
TA:B
R694
680
R695
220k
C695
0.1
25V
F:1608
C692
4.7
10V
TA, :A
C691
4.7
20V
:TA, B
L691
100µH
:2520
R697
10k
R692
4700
2.8
(A-1) (A-1)
Q691, 692
BUFFER
Q692
2SC4178
14.9
R696
100
8
S
2
8.2
Q691
2SK1875
14.9

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡
PB			

09

CD-137 BOARD


21
9 Vp-p
H
IC691 ① ②
22
9 Vp-p
H
IC691 ③ ④
23
0.8Vp-p
H
IC691 ⑧

Note on the CCD imager replacement

- The CCD imager is not mounted for the already mounted CD-137 board supplied as the repair parts.
  When replacing the CD-137 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

CD-137 (CCD IMAGER), VC-159 (CAMER

— Ref. No. CD-137 BOARD: 1,000 series, VC-159 BOAR

VC-159 BOARD

C601	F-3
C604	F-6
C606	E-3
C607	E-3
C608	C-2
C610	B-3
C611	C-1
C612	C-4
C613	C-1
C614	C-1
C616	D-4
C617	D-4
C618	C-3
C619	B-3
C620	G-3
C621	B-3
C622	B-3
C623	G-3
C624	G-3
C627	F-3
C628	C-4
C629	C-1
C630	C-1
C632	F-3
C633	C-2
C634	C-1
C637	D-1
C638	E-3
C643	C-5
C645	A-4
C646	G-4
C696	B-4
C697	B-8
C698	B-8
C700	E-8
C701	C-6
C702	E-6
C703	D-8
C704	D-8
C705	E-6
C706	C-6
C708	C-8
C709	C-6
C710	F-6
C711	C-8
C712	F-6
C713	C-8
C715	B-7
C716	A-4
C717	A-5
C718	C-6
C719	C-7
C721	C-7
C725	E-5
C726	E-5
C727	B-5
C728	B-5
C729	B-5
C730	F-6
C731	E-6
C732	F-5
C733	F-5
C734	E-6
C735	E-5
C739	F-5
C742	A-8
C743	F-6
C745	F-8
C746	F-6
C747	F-8
C748	F-9
C750	G-9
C751	B-10
C752	B-10
C753	G-10
C754	G-10
C755	A-10
C756	A-10
C757	F-9
CN601	F-2
CN701	C-8
CN751	B-10
CT701	C-8
D701	E-6
D702	F-6
D703	C-6
D705	E-6
FL601	C-2
IC601	F-6
IC602	A-6
IC603	B-6
IC604	C-2
IC609	A-3
IC610	C-3
IC611	F-3
IC614	E-1
IC701	E-6
IC702	C-7
IC703	E-5
IC704	A-5
IC705	F-5
IC751	B-10
IC752	F-8
IC753	F-9
IC754	G-10
IC755	F-6

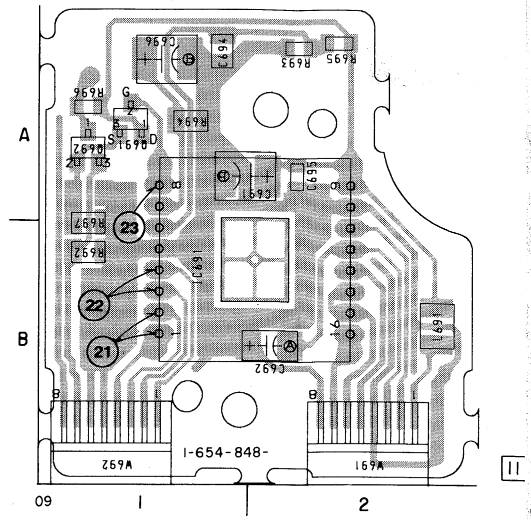
L601	F-6
L604	F-2
L605	C-1
L608	E-1
L704	E-5
L751	G-9
Q604	C-2
Q605	C-1
Q606	C-1
Q607	C-2
Q701	E-8
Q751	F-8
Q752	A-10
R601	A-6
R602	F-6
R603	A-6
R604	G-7
R606	C-2
R607	C-1
R608	F-3
R609	C-1
R610	C-1
R611	C-1
R612	E-1
R613	E-1
R617	C-4
R619	E-3
R620	G-7
R621	G-7
R623	C-4
R624	G-2
R625	C-4
R626	G-7
R627	G-7
R628	G-7
R629	G-7
R630	E-3
R631	B-6
R634	D-4
R635	D-3
R636	C-3
R637	D-3
R638	D-3
R640	C-3
R642	E-3
R643	C-3
R645	B-2
R646	G-2
R647	G-3
R648	B-2
R649	G-7
R650	C-2
R651	C-1
R652	C-1
R653	F-2
R656	F-3
R658	F-3
R659	C-1
R661	C-1
R662	C-2
R663	C-1
R664	C-2
R665	C-2
R666	B-2
R667	E-1
R668	E-1
R669	C-1
R670	C-1
R671	D-2
R701	C-6
R702	D-8
R703	E-8
R705	F-5
R708	G-5
R709	C-6
R710	E-6
R712	E-6
R713	E-5
R714	G-5
R716	F-6
R718	A-5
R719	F-6
R720	B-5
R724	B-4
R725	C-6
R728	E-8
R729	B-4
R731	B-4
R741	G-7
R742	G-6
R743	F-8
R744	F-6
R745	F-6
R746	F-8
R747	F-8
R748	G-8
R749	F-6
R750	G-8
R751	A-10
R752	B-10
R753	A-10
R754	B-10
R755	B-10
R756	B-9
R757	A-10
R758	B-10
R759	B-10
R760	B-9
R761	A-10
R762	A-10

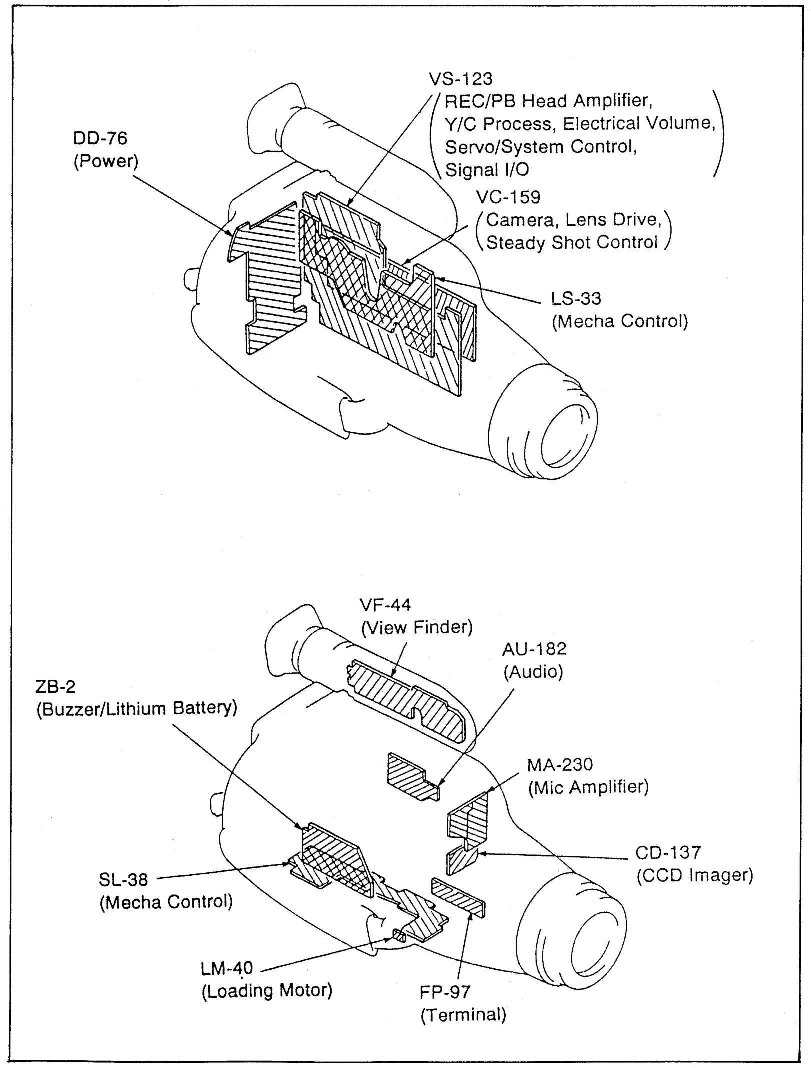
R764	C-8
R798	F-8
R799	G-8
X601	A-5
X701	C-7

CD-137 BOARD

C691	A-2
C692	B-2
C694	A-1
C695	A-2
C696	A-1
IC691	B-2
L691	B-2
Q691	A-1
Q692	A-1
R692	B-1
R693	A-2
R694	A-1
R695	A-2
R696	A-1
R697	B-1
W691	B-2
W692	B-1

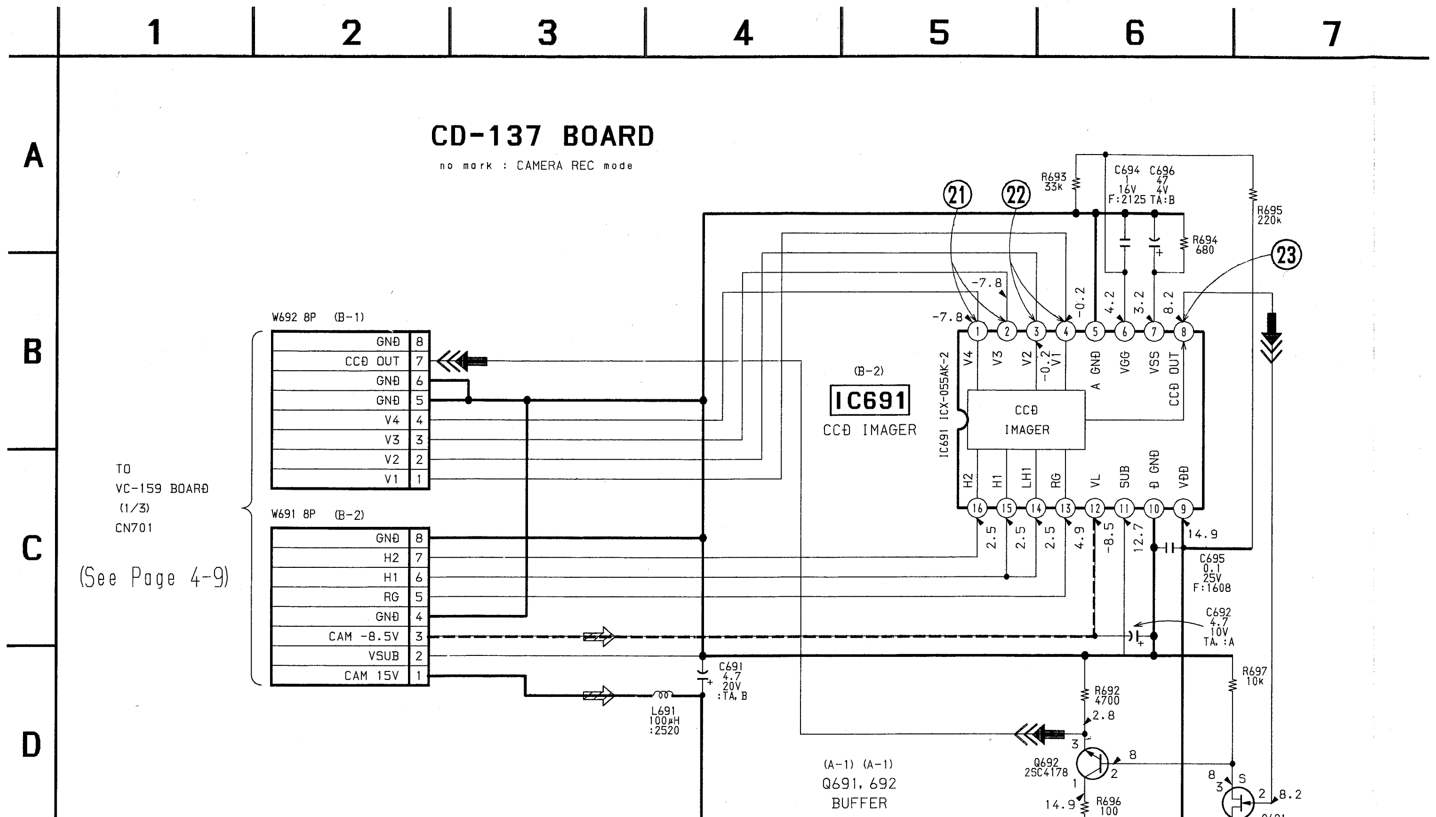
CD-137 BOARD


A
B
1
2
09
21
22
23
1-654-848-
IC691


VS-123
(REC/PB Head Amplifier, Y/C Process, Electrical Volume, Servo/System Control, Signal I/O)
DD-76
(Power)
VC-159
(Camera, Lens Drive, Steady Shot Control)
LS-33
(Mecha Control)
VF-44
(View Finder)
AU-182
(Audio)
ZB-2
(Buzzer/Lithium Battery)
MA-230
(Mic Amplifier)
CD-137
(CCD Imager)
SL-38
(Mecha Control)
LM-40
(Loading Motor)
FP-97
(Terminal)

CD-137 (CCD IMAGER) SCHEMATIC DIAGRAM

— Ref. No. CD-137 BOARD: 1,000 series —

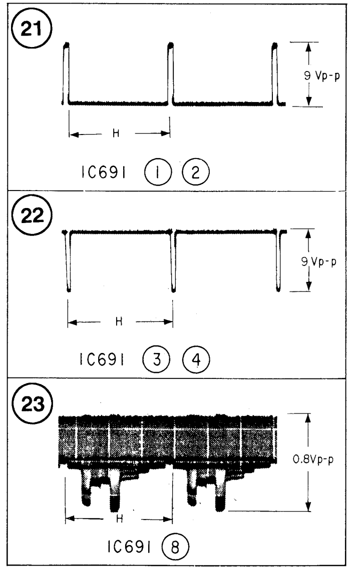

1
2
3
4
5
6
7
A
B
C
D
E
CD-137 BOARD
no mark : CAMERA REC mode
W692 8P (B-1)
GND 8
CCD OUT 7
GND 6
GND 5
V4 4
V3 3
V2 2
V1 1
TO
VC-159 BOARD
(1/3)
CN701
(See Page 4-9)
W691 8P (B-2)
GND 8
H2 7
H1 6
RG 5
GND 4
CAM -8.5V 3
VSUB 2
CAM 15V 1
(B-2)
IC691
CCD IMAGER
IC691 ICX-055AK-2
V4
V3
V2
V1
A GND
VGG
VSS
CCD OUT
H2
H1
LH1
RG
VL
SUB
D GND
VDD
-7.8
-7.8
-0.2
-0.2
4.2
3.2
8.2
2.5
2.5
2.5
4.9
-8.5
12.7
14.9
21
22
23
R693 33k
C694 1 16V F:2125
C696 47 4V TA:B
R694 680
R695 220k
C695 0.1 25V F:1608
C692 4.7 10V TA :A
C691 4.7 20V :TA, B
L691 100μH :2520
R692 4700
R697 10k
R696 100
2.8
14.9
Q692 2SC4178
Q691 2SK1875
8.2
14.9
(A-1) (A-1)
Q691, 692
BUFFER

•SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			⇛
PB			

09

CD-137 BOARD



Note on the CCD Imager replacement

- The CCD imager is not mounted for the already mounted CD-137 board supplied as the repair parts.
  When replacing the CD-137 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

CD-137 (CCD IMAGER), VC-159 (CAMER

— Ref. No. CD-137 BOARD: 1,000 series, VC-159 BOAR

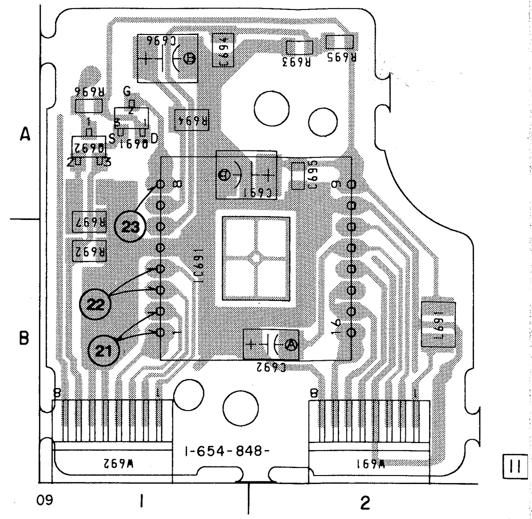
VC-159 BOARD

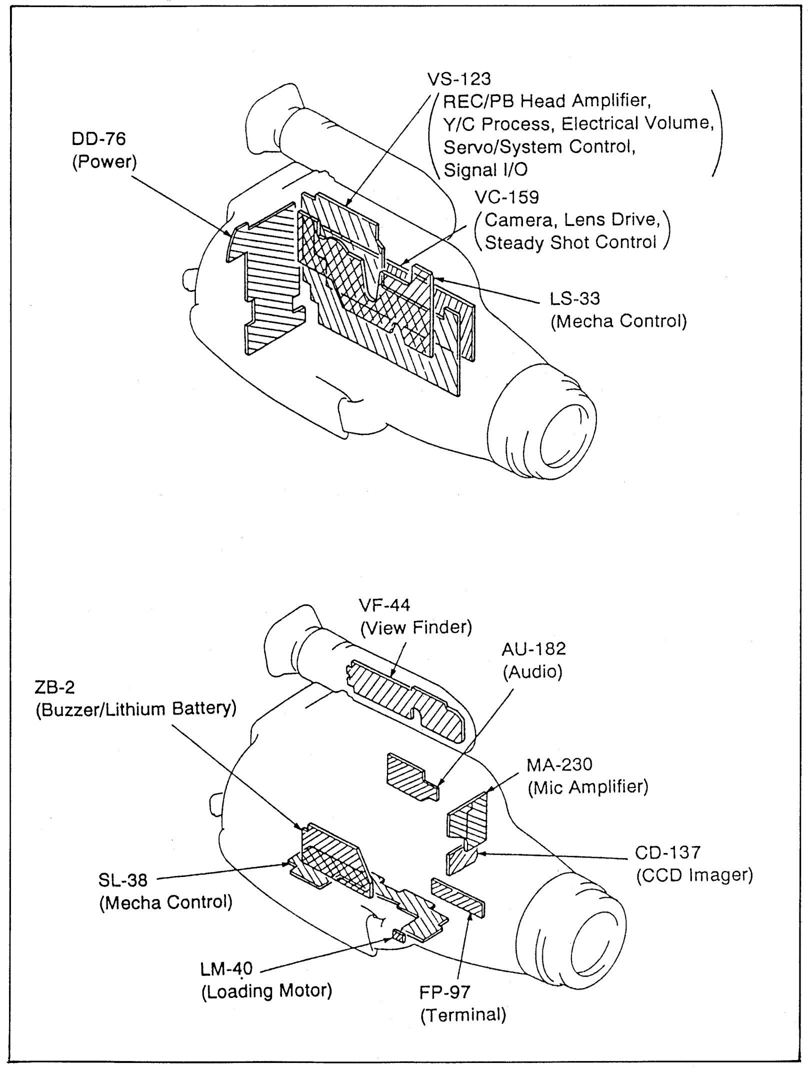
C601	F-3
C604	F-6
C606	E-3
C607	E-3
C608	C-2
C610	B-3
C611	C-1
C612	C-4
C613	C-1
C614	C-1
C616	D-4
C617	D-4
C618	C-3
C619	B-3
C620	G-3
C621	B-3
C622	B-3
C623	G-3
C624	G-3
C627	F-3
C628	C-4
C629	C-1
C630	C-1
C632	F-3
C633	C-2
C634	C-1
C637	D-1
C638	E-3
C643	C-5
C645	A-4
C646	G-4
C696	B-4
C697	B-8
C698	B-8
C700	E-8
C701	C-6
C702	E-6
C703	D-8
C704	D-8
C705	E-6
C706	C-6
C708	C-8
C709	C-6
C710	F-6
C711	C-8
C712	F-6
C713	C-8
C715	B-7
C716	A-4
C717	A-5
C718	C-6
C719	C-7
C721	C-7
C725	E-5
C726	E-5
C727	B-5
C728	B-5
C729	B-5
C730	F-6
C731	E-6
C732	F-5
C733	F-5
C734	E-6
C735	E-5
C739	F-5
C742	A-8
C743	F-6
C745	F-8
C746	F-6
C747	F-8
C748	F-9
C750	G-9
C751	B-10
C752	B-10
C753	G-10
C754	G-10
C755	A-10
C756	A-10
C757	F-9
CN601	F-2
CN701	C-8
CN751	B-10
CT701	C-8
D701	E-6
D702	F-6
D703	C-6
D705	E-6
FL601	C-2
IC601	F-6
IC602	A-6
IC603	B-6
IC604	C-2
IC609	A-3
IC610	C-3
IC611	F-3
IC614	E-1
IC701	E-6
IC702	C-7
IC703	E-5
IC704	A-5
IC705	F-5
IC751	B-10
IC752	F-8
IC753	F-9
IC754	G-10
IC755	F-6
L601	F-6
L604	F-2
L605	C-1
L608	E-1
L704	E-5
L751	G-9
Q604	C-2
Q605	C-1
Q606	C-1
Q607	C-2
Q701	E-8
Q751	F-8
Q752	A-10
R601	A-6
R602	F-6
R603	A-6
R604	G-7
R606	C-2
R607	C-1
R608	F-3
R609	C-1
R610	C-1
R611	C-1
R612	E-1
R613	E-1
R617	C-4
R619	E-3
R620	G-7
R621	G-7
R623	C-4
R624	G-2
R625	C-4
R626	G-7
R627	G-7
R628	G-7
R629	G-7
R630	E-3
R631	B-6
R634	D-4
R635	D-3
R636	C-3
R637	D-3
R638	D-3
R640	C-3
R642	E-3
R643	C-3
R645	B-2
R646	G-2
R647	G-3
R648	B-2
R649	G-7
R650	C-2
R651	C-1
R652	C-1
R653	F-2
R656	F-3
R658	F-3
R659	C-1
R661	C-1
R662	C-2
R663	C-1
R664	C-2
R665	C-2
R666	B-2
R667	E-1
R668	E-1
R669	C-1
R670	C-1
R671	D-2
R701	C-6
R702	D-8
R703	E-8
R705	F-5
R708	G-5
R709	C-6
R710	E-6
R712	E-6
R713	E-5
R714	G-5
R716	F-6
R718	A-5
R719	F-6
R720	B-5
R724	B-4
R725	C-6
R728	E-8
R729	B-4
R731	B-4
R741	G-7
R742	G-6
R743	F-8
R744	F-6
R745	F-6
R746	F-8
R747	F-8
R748	G-8
R749	F-6
R750	G-8
R751	A-10
R752	B-10
R753	A-10
R754	B-10
R755	B-10
R756	B-9
R757	A-10
R758	B-10
R759	B-10
R760	B-9
R761	A-10
R762	A-10
R764	C-8
R798	F-8
R799	G-8
X601	A-5
X701	C-7

CD-137 BOARD

C691	A-2
C692	B-2
C694	A-1
C695	A-2
C696	A-1
IC691	B-2
L691	B-2
Q691	A-1
Q692	A-1
R692	B-1
R693	A-2
R694	A-1
R695	A-2
R696	A-1
R697	B-1
W691	B-2
W692	B-1

CD-137 BOARD


A
B
1
2
09
C696
C694
R693
R695
R694
C695
C691
Q691
Q692
IC691
C692
L691
R697
R696
R692
21
22
23
W692
W691
1-654-848-


VS-123
(REC/PB Head Amplifier, Y/C Process, Electrical Volume, Servo/System Control, Signal I/O)
DD-76
(Power)
VC-159
(Camera, Lens Drive, Steady Shot Control)
LS-33
(Mecha Control)
VF-44
(View Finder)
AU-182
(Audio)
ZB-2
(Buzzer/Lithium Battery)
MA-230
(Mic Amplifier)
CD-137
(CCD Imager)
SL-38
(Mecha Control)
LM-40
(Loading Motor)
FP-97
(Terminal)

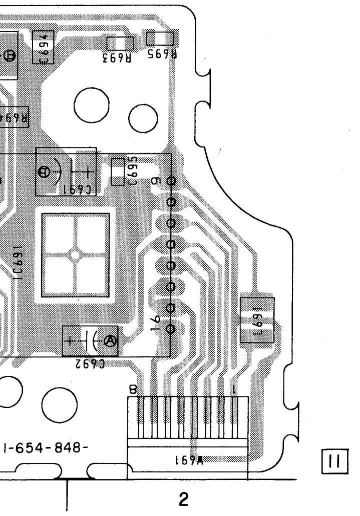
IMAGER), VC-159 (CAMERA, LENS DRIVE) PRINTED WIRING BOARDS

7 BOARD: 1,000 series, VC-159 BOARD: 2,000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.

- ● : Through hole is omitted.

BOARD

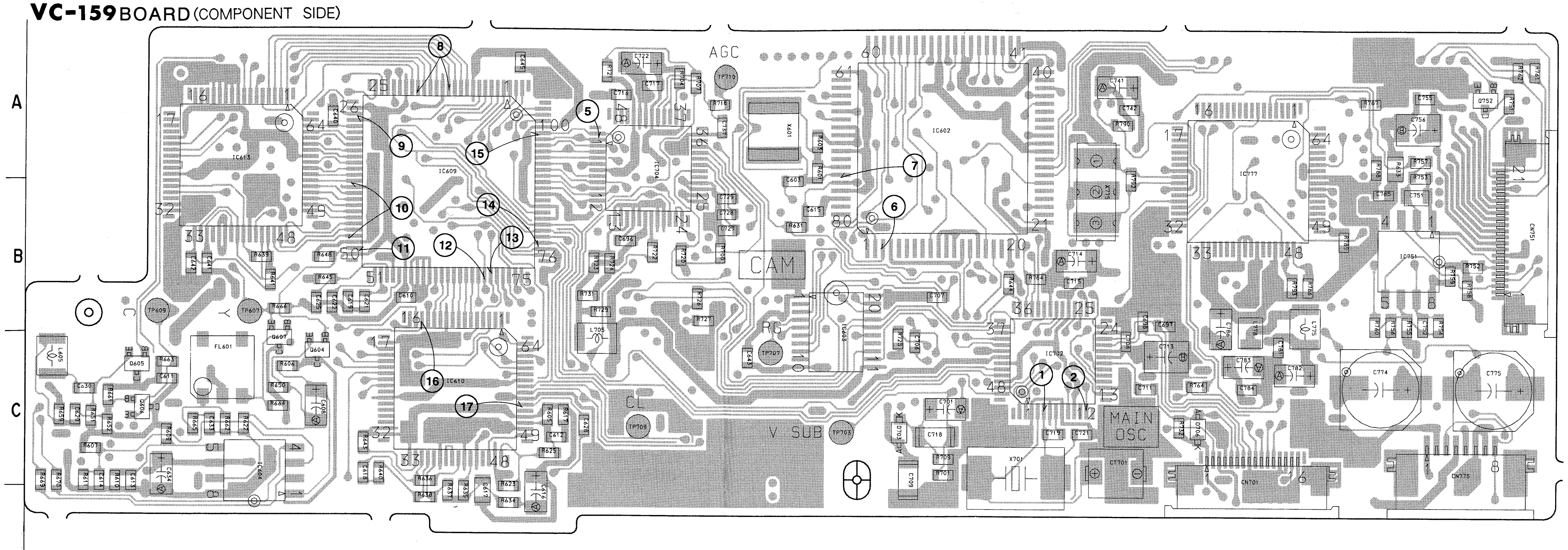


I-654-848-
11
2

e,

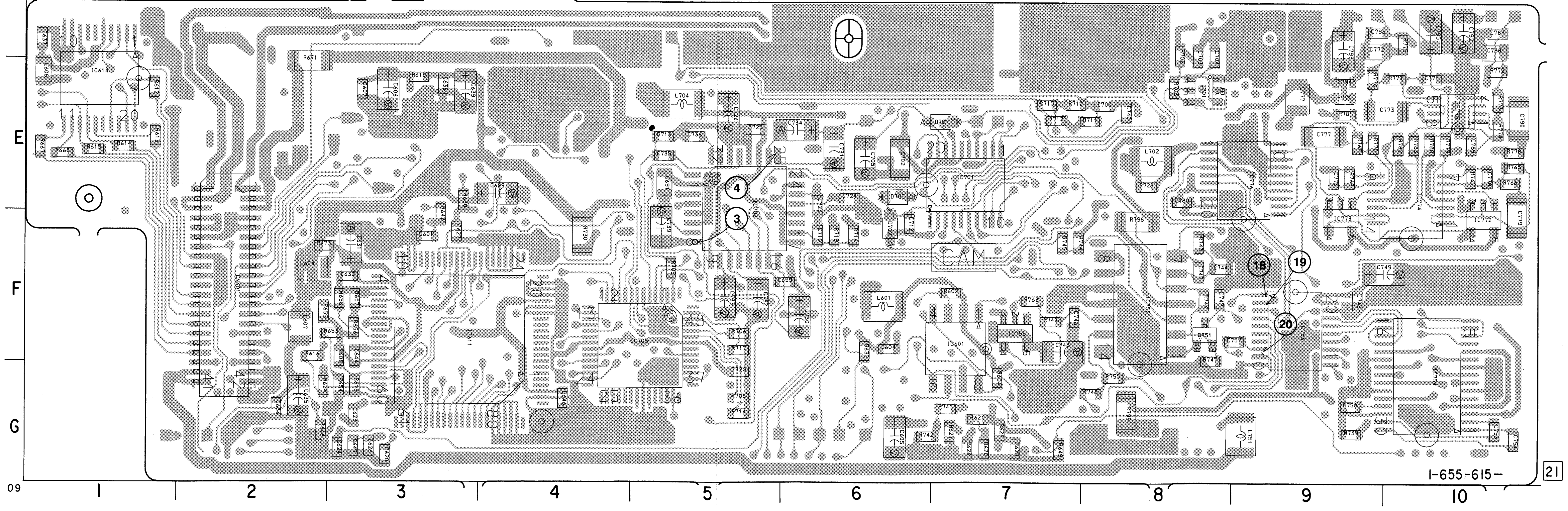
nager)

VC-159 BOARD (COMPONENT SIDE)



A
B
C
AGC
CAM
RG
CL
V SUB
MAIN OSC
IC602
IC609
IC610
IC613
IC702
IC777
TP609
TP607
TP707
TP708
TP703
TP710
FL601
CN701
CN775
C774
C775
X701
1
2
5
6
7
8
9
10
11
12
13
14
15
16
17

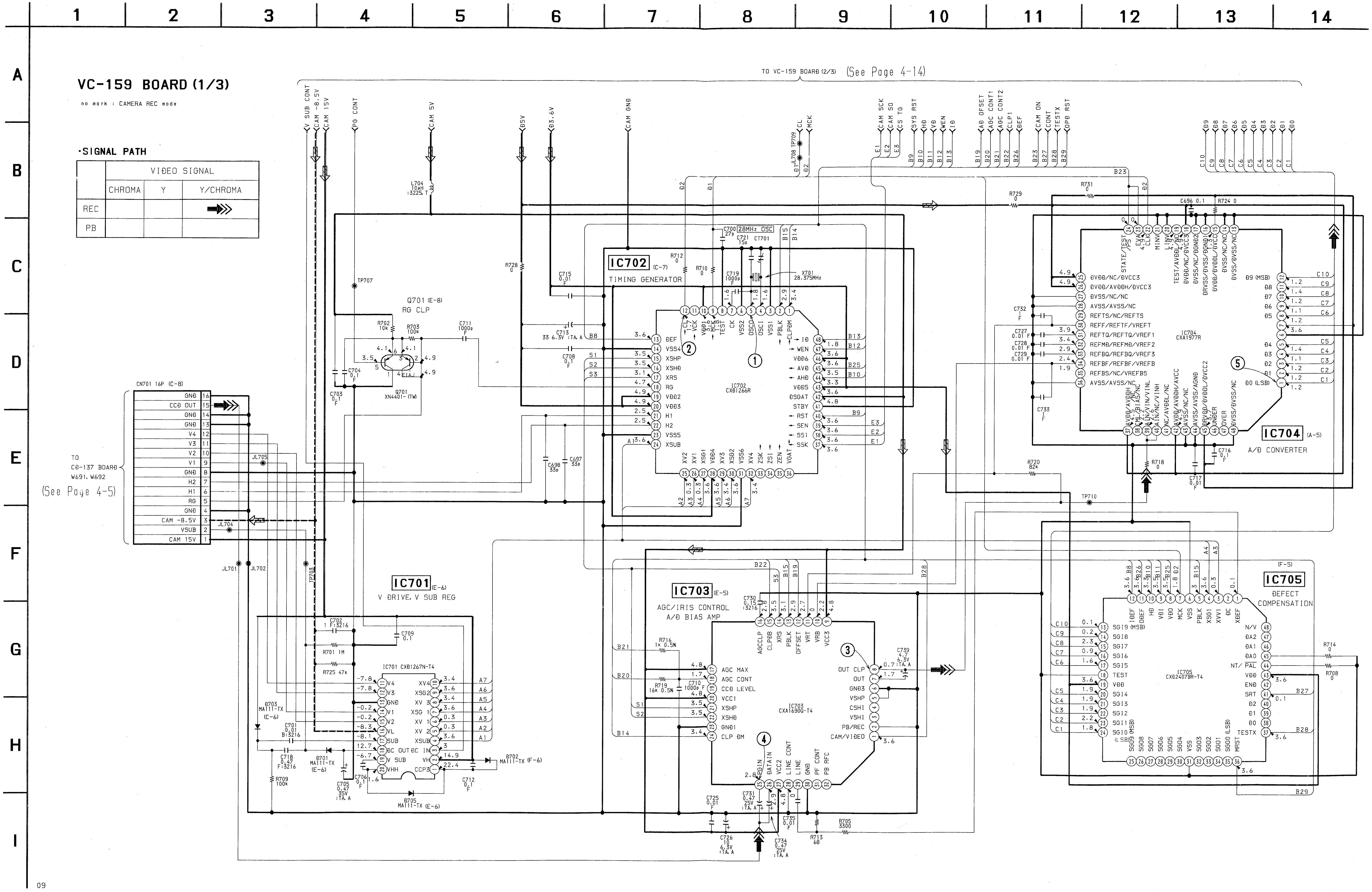
D **VC-159** BOARD (CONDUCTOR SIDE)



E
F
G
CAM
IC614
IC701
IC705
IC601
3
4
18
19
20
I-655-615-
21
09
1
2
3
4
5
6
7
8
9
10

VC-159 (CAMERA) SCHEMATIC DIAGRAM

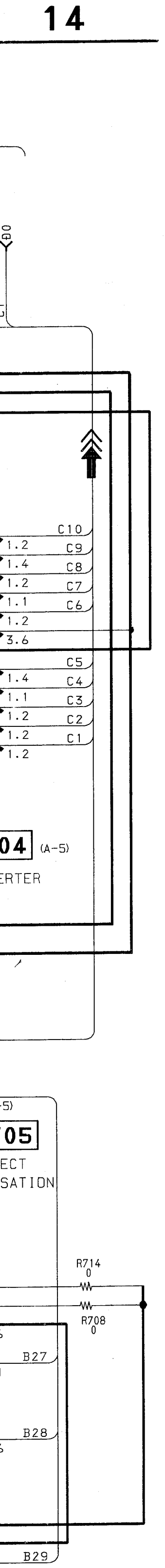
— Ref. No. VC-159 BOARD: 2,000 series —



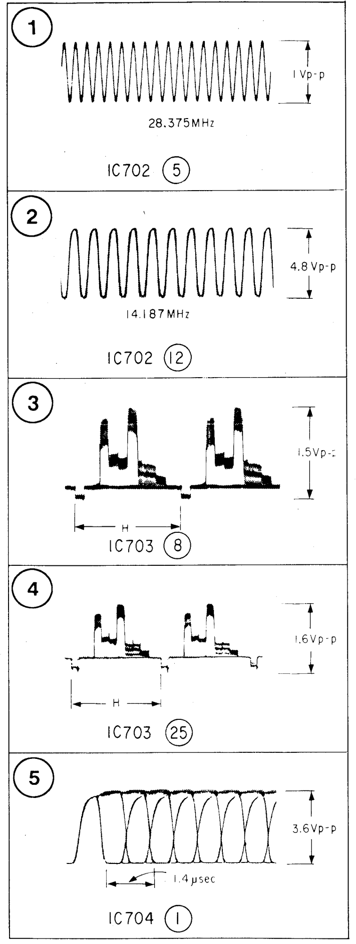
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
H
I
VC-159 BOARD (1/3)
no mark : CAMERA REC mode
TO VC-159 BOARD (2/3) (See Page 4-14)
V SUB CONT
CAM -8.5V
CAM 15V
PG CONT
CAM 5V
D5V
D3.6V
CAM GND
CL
MCK
CAM SCK
CAM SO
CS TG
SYS RST
HD
VD
WEN
ID
AD OFSET
AGC CONT1
AGC CONT2
CLP1
DEF
CAM ON
CONT
TESTX
DPD RST
D9
D8
D7
D6
D5
D4
D3
D2
D1
D0
IC702 (C-7)
TIMING GENERATOR
IC702 CXD1266R
X701 28.375MHz
C700 28MHz OSC
Q701 (E-8)
RG CLP
Q701 XN4401-(TW)
TP707
L704 10μH
CN701 16P (C-8)
GND
CCD OUT
GND
GND
V4
V3
V2
V1
GND
H2
H1
RG
GND
CAM -8.5V
VSUB
CAM 15V
TO CD-137 BOARD W691, W692
(See Page 4-5)
JL701
JL702
JL704
JL705
TP703
IC701 (E-6)
V DRIVE, V SUB REG
IC701 CXD1267N-T4
D701 MA111-TX (E-6)
D702 MA111-TX (F-6)
D703 MA111-TX (C-6)
D705 MA111-TX (E-6)
IC703 (E-5)
AGC/IRIS CONTROL
A/D BIAS AMP
IC703 CXA1690Q-T4
IC704 (A-5)
A/D CONVERTER
IC704 CXA1977R
IC705 (F-5)
DEFECT COMPENSATION
IC705 CXD2407BR-T4
TP710
①
②
③
④
⑤

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡
PB			


14
C10
1.2
C9
1.4
C8
1.2
C7
1.1
C6
1.2
3.6
C5
1.4
C4
1.1
C3
1.2
C2
1.2
C1
1.2
04
(A-5)
ERTER
05
ECT
SATION
R714
0
R708
0
B27
B28
B29

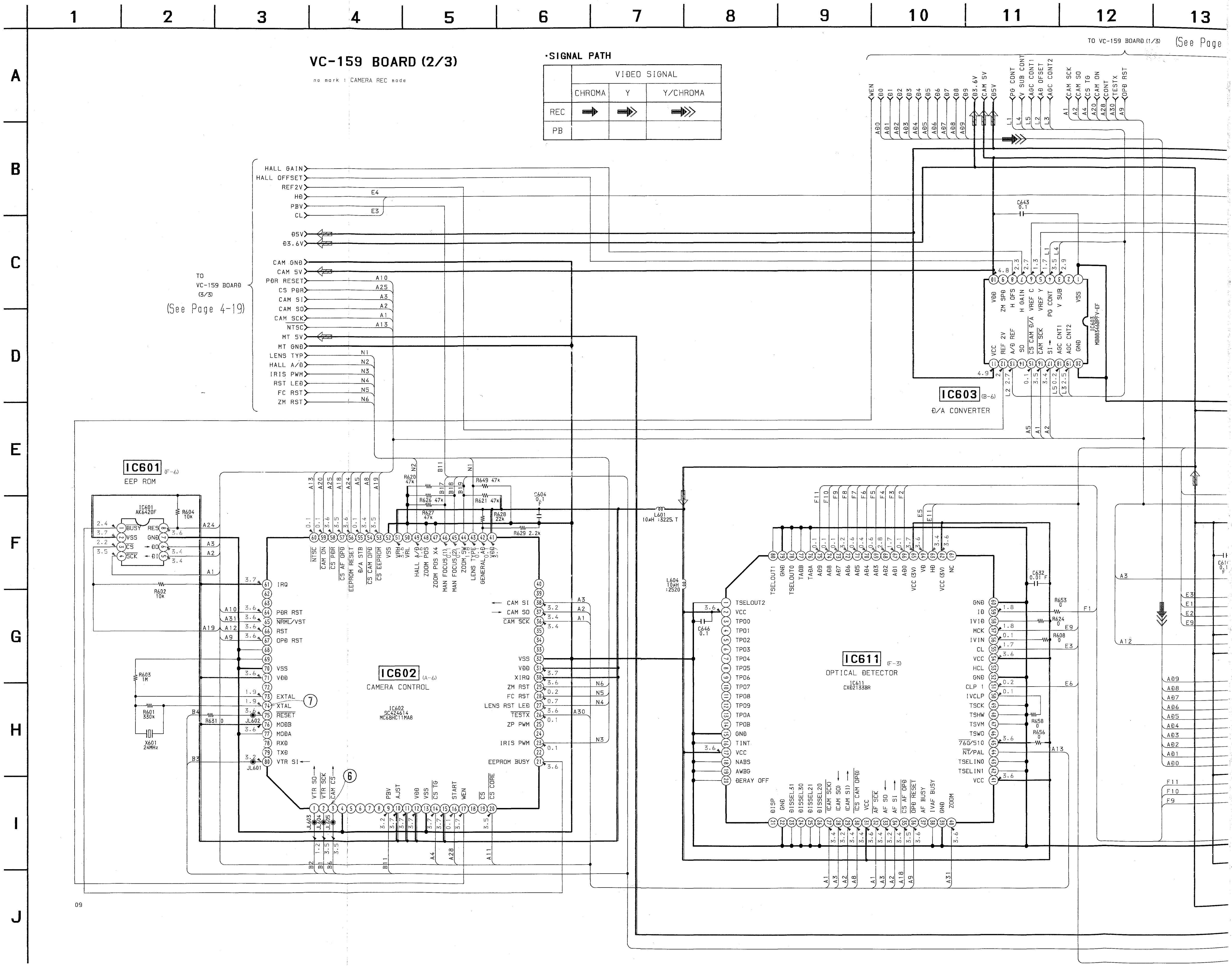
VC-159 BOARD (1/3)



VC-159 (CAMERA) SCHEMATIC DIAGRAM

— Ref. No. VC-159 BOARD: 2,000 series —

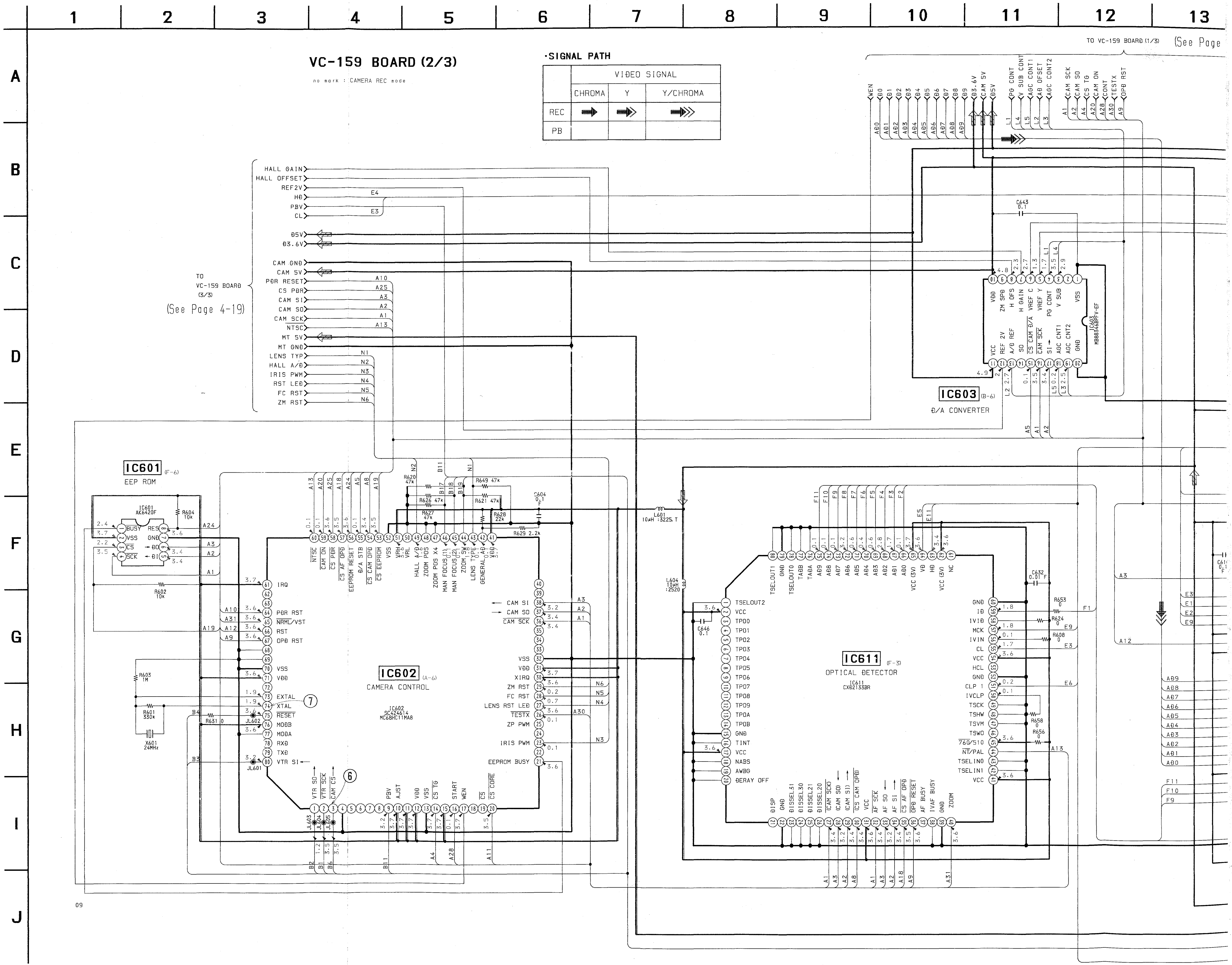
• Refer to page 4-7 for Printed Wiring Board.

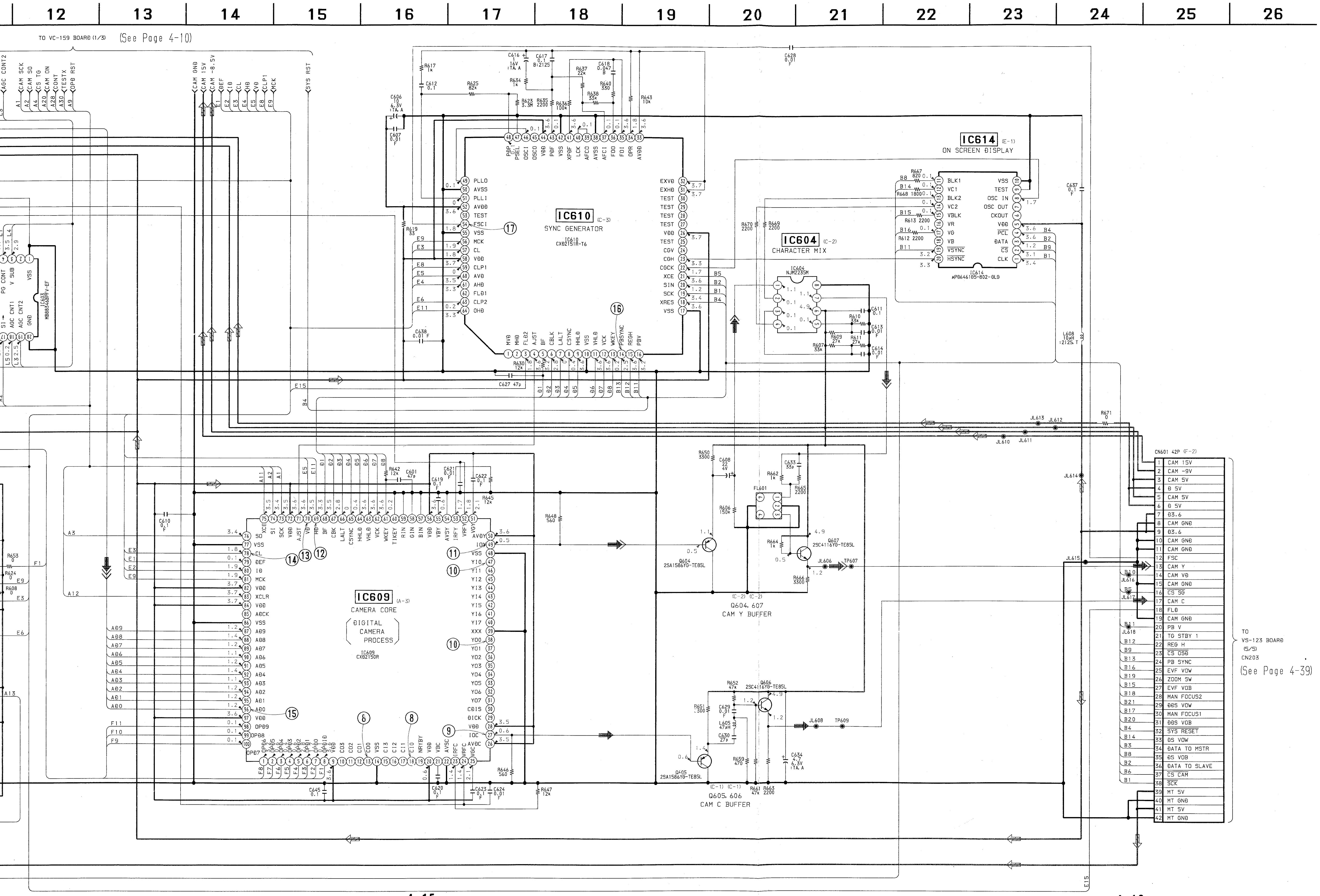

VC-159 BOARD (2/3)
no mark : CAMERA REC mode
·SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TO VC-159 BOARD (1/3) (See Page
TO VC-159 BOARD (3/3) (See Page 4-19)
HALL GAIN
HALL OFFSET
REF2V
HD
PBV
CL
05V
03.6V
CAM GND
CAM 5V
PBR RESET
CS PBR
CAM SI
CAM SO
CAM SCK
NTSC
MT 5V
MT GND
LENS TYP
HALL A/D
IRIS PWM
RST LED
FC RST
ZM RST
IC601 (F-6)
EEP ROM
IC601 AK6420F
IC602 (A-6)
CAMERA CONTROL
IC602 SC424614 MC68HC11MA8
IC603 (B-6)
D/A CONVERTER
IC603 MB88346BPFV-EF
IC611 (F-3)
OPTICAL DETECTOR
IC611 CXD2133BR
X601 24MHz
L601 10μH
L604 10μH
⑥
⑦
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
9
10
11
12
13

VC-159 (CAMERA) SCHEMATIC DIAGRAM

— Ref. No. VC-159 BOARD: 2,000 series —

- Refer to page 4–7 for Printed Wiring Board.


VC-159 BOARD (2/3)
no mark : CAMERA REC mode
·SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
TO VC-159 BOARD (1/3)
(See Page
TO VC-159 BOARD (3/3)
(See Page 4-19)
HALL GAIN
HALL OFFSET
REF2V
HB
PBV
CL
B5V
B3.6V
CAM GND
CAM 5V
PBR RESET
CS PBR
CAM SI
CAM SO
CAM SCK
NTSC
MT 5V
MT GND
LENS TYP
HALL A/D
IRIS PWM
RST LED
FC RST
ZM RST
IC601
EEP ROM
AK6420F
R604 10k
R602 10k
R603 1M
R601 330k
X601 24MHz
IC602
CAMERA CONTROL
SC424614 MC68HC11MA8
IC603
D/A CONVERTER
MB88346BPFV-EF
C643 0.1
IC611
OPTICAL DETECTOR
CXD2133BR
L601 10µH
L604 10µH
C604 0.1
C632 0.01
C646 0.1
IRQ
PBR RST
NRML/VST
RST
OPB RST
VSS
VDD
EXTAL
XTAL
RESET
MODB
MODA
RXD
TXD
VTR SI
EEPROM BUSY
IRIS PWM
ZP PWM
TESTX
LENS RST LED
FC RST
ZM RST
XIRQ
CAM SI
CAM SO
CAM SCK
TSELOUT2
TSELOUT1
TSELOUT0
TINT
NABS
AWBG
BERAY OFF
GND
VCC
ZOOM
⑥
⑦


12
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21
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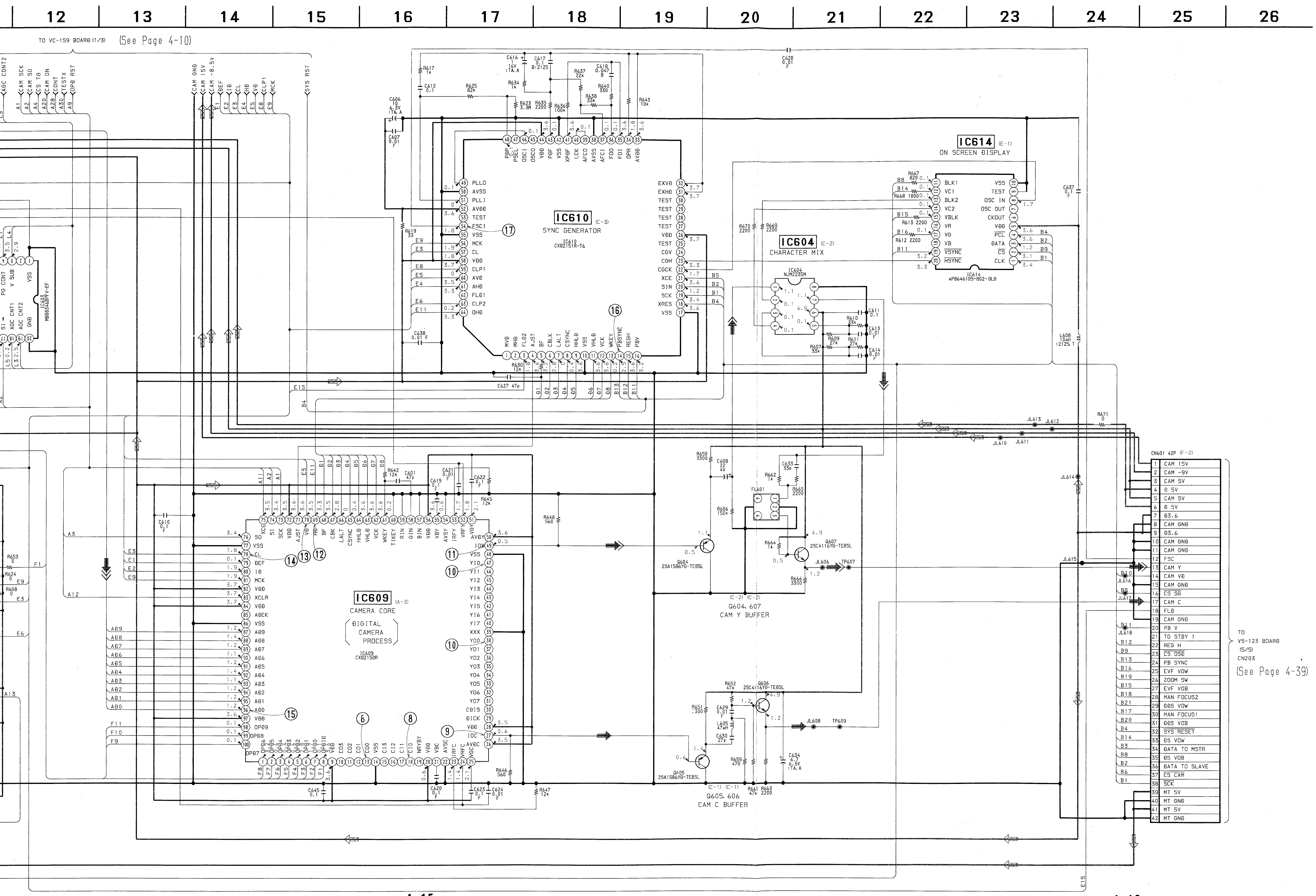
23
24
25
26
TO VC-159 BOARD (1/3)
(See Page 4-10)
AGC CONT2
CAM SCK
CAM SO
CS TG
CAM ON
CONT
TESTX
OPB RST
CAM GND
CAM 15V
CAM -8.5V
DEF
ID
CL
HD
VD
MCK
CLP1
SYS RST
IC603 MB88346BPFV-EF
IC610 (C-3)
SYNC GENERATOR
IC610 CXD2151R-T6
PLLO
AVSS
PLLI
AVDD
TEST
FSCI
VSS
MCK
CL
VDD
CLP1
AVD
AHD
FLD1
CLP2
OHD
EXVD
EXHD
TEST
VDD
CGV
CGH
CGCK
XCE
SIN
SCK
XRES
VSS
PBP
PSEL
OSCI
OSCO
VDD
PDF
VSS
XPDF
LCK
AFCO
AVSS
AFCI
FDO
FDI
DPR
AVDD
MVD
MHD
FLD2
AJST
BF
CBLK
LALT
CSYNC
HHLD
VSS
VHLD
VCK
WKEY
PBSYNC
REGH
PBV
IC614 (E-1)
ON SCREEN DISPLAY
BLK1
VC1
BLK2
VC2
VBLK
VR
VG
VB
VSYNC
HSYNC
OSC IN
OSC OUT
CKOUT
PCL
DATA
CS
CLK
IC614 μPD6461GS-B02-QLG
IC604 (C-2)
CHARACTER MIX
IC604 NJM2235M
IC609 (A-3)
CAMERA CORE
DIGITAL CAMERA PROCESS
IC609 CXD2150R
Q604, 607
CAM Y BUFFER
Q604 2SA1586YG-TE85L
Q607 2SC4116YG-TE85L
FL601
Q605, 606
CAM C BUFFER
Q605 2SA1586YG-TE85L
Q606 2SC4116YG-TE85L
JL606
TP607
JL608
TP609
JL610
JL611
JL612
JL613
JL614
JL615
JL616
JL617
JL618
R671 0
L608 10μH
CN601 42P (F-2)
1 CAM 15V
2 CAM -9V
3 CAM 5V
4 D 5V
5 CAM 5V
6 D 5V
7 D3.6
8 CAM GND
9 D3.6
10 CAM GND
11 CAM GND
12 FSC
13 CAM Y
14 CAM VD
15 CAM GND
16 CS SG
17 CAM C
18 FLD
19 CAM GND
20 PB V
21 TG STBY 1
22 REG H
23 CS OSD
24 PB SYNC
25 EVF VOW
26 ZOOM SW
27 EVF VOB
28 MAN FOCUS2
29 DDS VOW
30 MAN FOCUS1
31 DDS VOB
32 SYS RESET
33 DS VOW
34 DATA TO MSTR
35 DS VOB
36 DATA TO SLAVE
37 CS CAM
38 SCK
39 MT 5V
40 MT GND
41 MT 5V
42 MT GND
TO
VS-123 BOARD
(5/5)
CN203
(See Page 4-39)
E15


12
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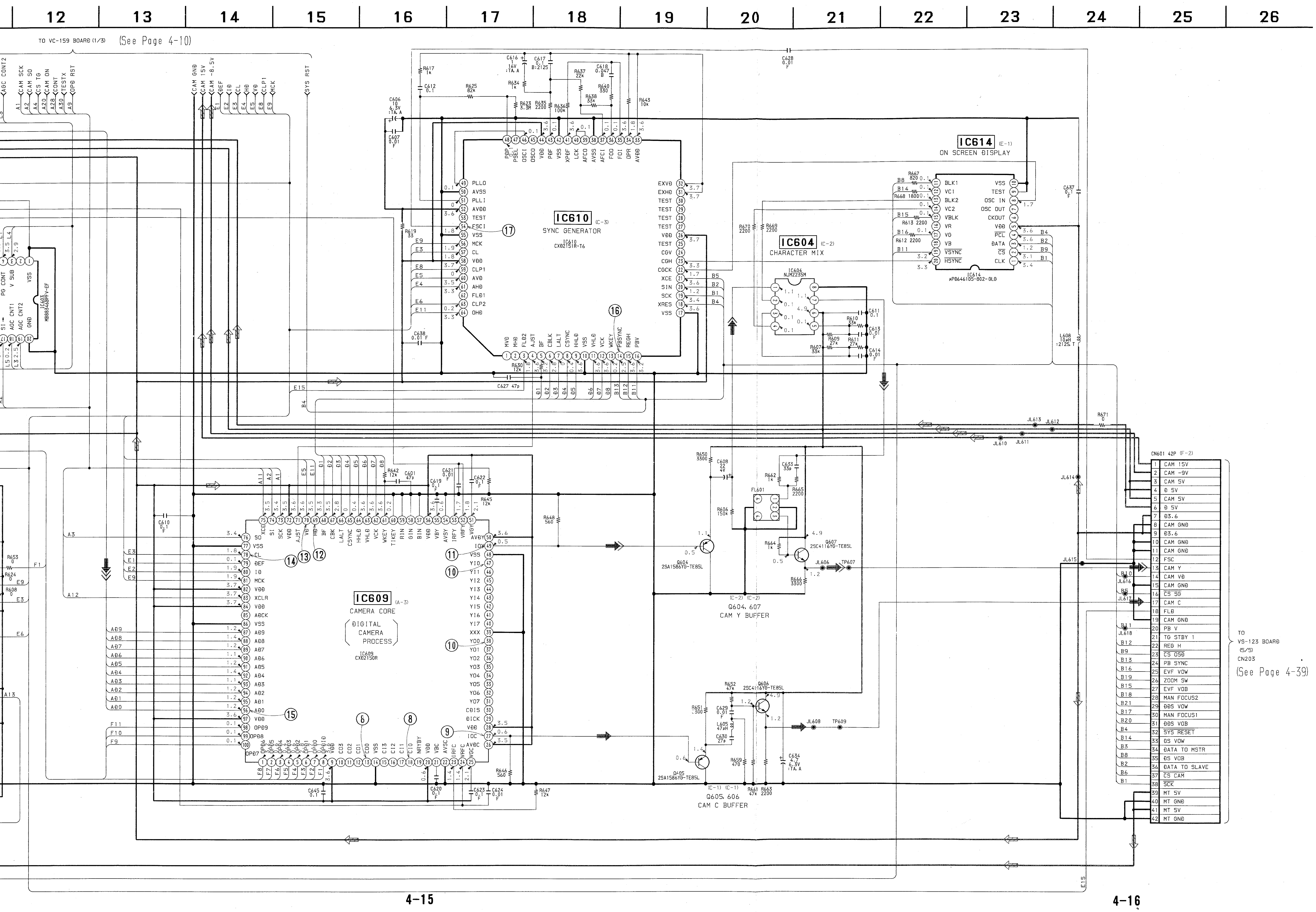
21
22
23
24
25
26
TO VC-159 BOARD (1/3)
(See Page 4-10)
AGC CONT2
CAM SCK
CAM SO
CS TG
CAM ON
CONT
TESTX
OPD RST
CAM GND
CAM 15V
CAM -8.5V
DEF
ID
CL
HD
VD
CLP1
MCK
SYS RST
IC603
MB88346BPFV-EF
PG CONT
V SUB
AGC CNT1
AGC CNT2
GND
VSS
IC610 (C-3)
SYNC GENERATOR
IC610
CXD2151R-T6
PLLO
AVSS
PLLI
AVDD
TEST
FSCI
VSS
MCK
CL
VDD
CLP1
AVD
AHD
FLD1
CLP2
OHD
PDP
PSEL
OSCI
OSCO
VDD
PDF
VSS
XPDF
LCK
AFCO
AVSS
AFCI
FOO
FOI
OPR
AVDD
EXVD
EXHD
TEST
VDD
CGV
CGH
CGCK
XCE
SIN
SCK
XRES
VSS
MVD
MHD
FLD2
AJST
BF
CBLK
LALT
CSYNC
HHLD
VSS
VHLD
VCK
WKEY
PBSYNC
REGH
PBV
(16)
(17)
IC609 (A-3)
CAMERA CORE
DIGITAL CAMERA PROCESS
IC609
CXD2150R
SO
VSS
CL
DEF
ID
MCK
VDD
XCLR
VDD
ADCK
VSS
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
AD0
VDD
OPD9
OPD8
OPD7
XCE
SI
SCK
VDD
AJST
VD
HD
BF
CBK
LALT
CSYNC
HHLD
VHLD
VCK
WKEY
TIKEY
RIN
GIN
BIN
VDD
VBY
AVSY
IRFY
VRFY
VGY
AVDY
IOY
VSS
YI0
YI1
YI2
YI3
YI4
YI5
YI6
YI7
XXX
YO0
YO1
YO2
YO3
YO4
YO5
YO6
YO7
CDIS
DICK
VDD
IOC
AVDC
OPD6
OPD5
OPD4
OPD3
OPD2
OPD1
OPD0
OPDID
VDD
CO3
CO2
CO1
CO0
VSS
CI3
CI2
CI1
CI0
NRYBY
VDD
VBC
AVSC
IRFC
VRFC
VGC
(6)
(8)
(9)
(10)
(11)
(12)
(13)
(14)
(15)
IC604 (C-2)
CHARACTER MIX
IC604
NJM2235M
IC614 (E-1)
ON SCREEN DISPLAY
BLK1
VC1
BLK2
VC2
VBLK
VR
VG
VB
VSYNC
HSYNC
VSS
TEST
OSC IN
OSC OUT
CKOUT
VDD
PCL
DATA
CS
CLK
IC614
µPD6461GS-802-GLG
FL601
Q604
2SA1586YG-TE85L
Q607
2SC4116YG-TE85L
(C-2) (C-2)
Q604, 607
CAM Y BUFFER
Q606
2SC4116YG-TE85L
Q605
2SA1586YG-TE85L
(C-1) (C-1)
Q605, 606
CAM C BUFFER
JL606
TP607
JL608
TP609
L608
10µH
:2125, T
CN601 42P (F-2)
1 CAM 15V
2 CAM -9V
3 CAM 5V
4 D 5V
5 CAM 5V
6 D 5V
7 D3.6
8 CAM GND
9 D3.6
10 CAM GND
11 CAM GND
12 FSC
13 CAM Y
14 CAM VD
15 CAM GND
16 CS SG
17 CAM C
18 FLD
19 CAM GND
20 PB V
21 TG STBY 1
22 REG H
23 CS OSD
24 PB SYNC
25 EVF VOW
26 ZOOM SW
27 EVF VOB
28 MAN FOCUS2
29 DDS VOW
30 MAN FOCUS1
31 DDS VOB
32 SYS RESET
33 DS VOW
34 DATA TO MSTR
35 DS VOB
36 DATA TO SLAVE
37 CS CAM
38 SCK
39 MT 5V
40 MT GND
41 MT 5V
42 MT GND
TO
VS-123 BOARD
(5/5)
CN203
(See Page 4-39)



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19
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21
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23
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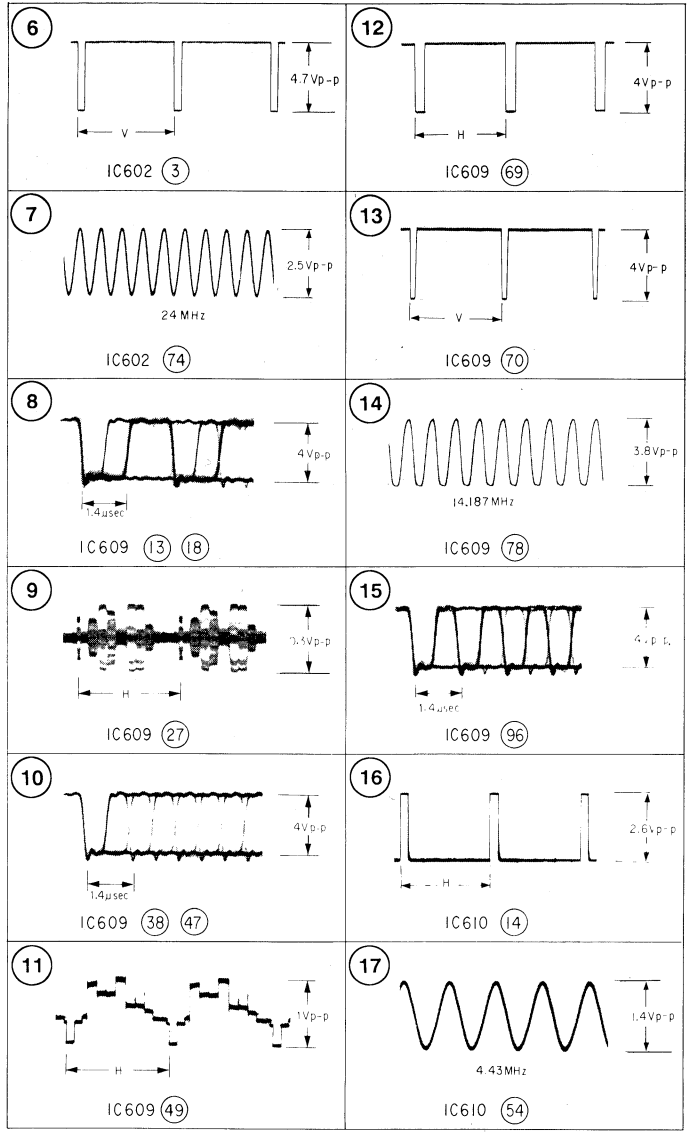
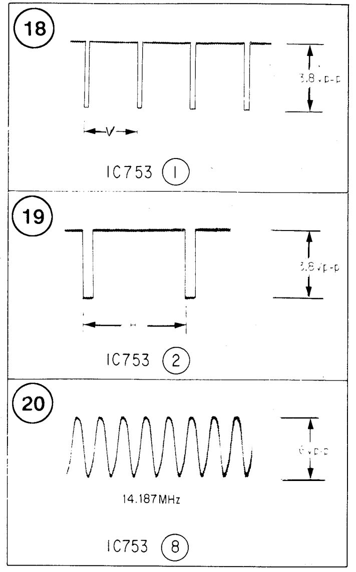
25
26
TO VC-159 BOARD (1/3) (See Page 4-10)
AGC CONT2
CAM SCK
CAM SO
CS TG
CAM ON
CONT
TESTX
OPD RST
CAM GND
CAM 15V
CAM -8.5V
DEF
ID
CL
HD
VD
CLP1
MCK
SYS RST
IC603 MB88346BPFV-EF
IC610 (C-3)
SYNC GENERATOR
IC610 CXD2151R-T6
PLLO
AVSS
PLLI
AVDD
TEST
FSCI
VSS
MCK
CL
VDD
CLP1
AVD
AHD
FLD1
CLP2
OHD
EXVD
EXHD
TEST
VDD
CGV
CGH
CGCK
XCE
SIN
SCK
XRES
VSS
PBP
PSEL
OSCI
OSCO
VDD
PBF
VSS
XPDF
LCK
AFCO
AVSS
AFCI
FDO
FDI
DPR
AVDD
MVD
MHD
FLD2
AJST
BF
CBLK
LALT
CSYNC
HHLD
VSS
VHLD
VCK
WKEY
PBSYNC
REGH
PBV
IC604 (C-2)
CHARACTER MIX
IC604 NJM2235M
IC614 (E-1)
ON SCREEN DISPLAY
IC614 μPD6461GS-B02-9LG
BLK1
VC1
BLK2
VC2
VBLK
VR
VG
VB
VSYNC
HSYNC
VSS
TEST
OSC IN
OSC OUT
CKOUT
VDD
PCL
BATA
CS
CLK
IC609 (A-3)
CAMERA CORE
DIGITAL CAMERA PROCESS
IC609 CXD2150R
SO
VSS
CL
DEF
ID
MCK
VDD
XCLR
VDD
ADCK
VSS
AD9
AD8
AD7
AD6
AD5
AD4
AD3
AD2
AD1
AD0
VDD
OPD9
OPD8
OPD7
AVDY
IOY
VSS
Y10
Y11
Y12
Y13
Y14
Y15
Y16
Y17
XXX
YOO
YO1
YO2
YO3
YO4
YO5
YO6
YO7
C01S
DICK
VDD
IOC
AVDC
Q604, 607
CAM Y BUFFER
Q604 2SA1586YG-TE85L
Q607 2SC4116YG-TE85L
FL601
Q605, 606
CAM C BUFFER
Q605 2SA1586YG-TE85L
Q606 2SC4116YG-TE85L
TP607
TP609
JL606
JL608
JL610
JL611
JL612
JL613
JL614
JL615
L608 10μH
R671 0
CN601 42P (F-2)
1 CAM 15V
2 CAM -9V
3 CAM 5V
4 D 5V
5 CAM 5V
6 D 5V
7 D3.6
8 CAM GND
9 D3.6
10 CAM GND
11 CAM GND
12 FSC
13 CAM Y
14 CAM VD
15 CAM GND
16 CS SG
17 CAM C
18 FLD
19 CAM GND
20 PB V
21 TG STBY 1
22 REG H
23 CS OSD
24 PB SYNC
25 EVF VOW
26 ZOOM SW
27 EVF VOB
28 MAN FOCUS2
29 DDS VOW
30 MAN FOCUS1
31 DDS VOB
32 SYS RESET
33 DS VOW
34 DATA TO MSTR
35 DS VOB
36 DATA TO SLAVE
37 CS CAM
38 SCK
39 MT 5V
40 MT GND
41 MT 5V
42 MT GND
B10 JL616
B5 JL617
B11 JL618
B12
B9
B13
B16
B19
B15
B18
B21
B17
B20
B4
B14
B3
B8
B2
B6
B1
TO VS-123 BOARD (5/5) CN203
(See Page 4-39)

VC-159 BOARD(2/3)



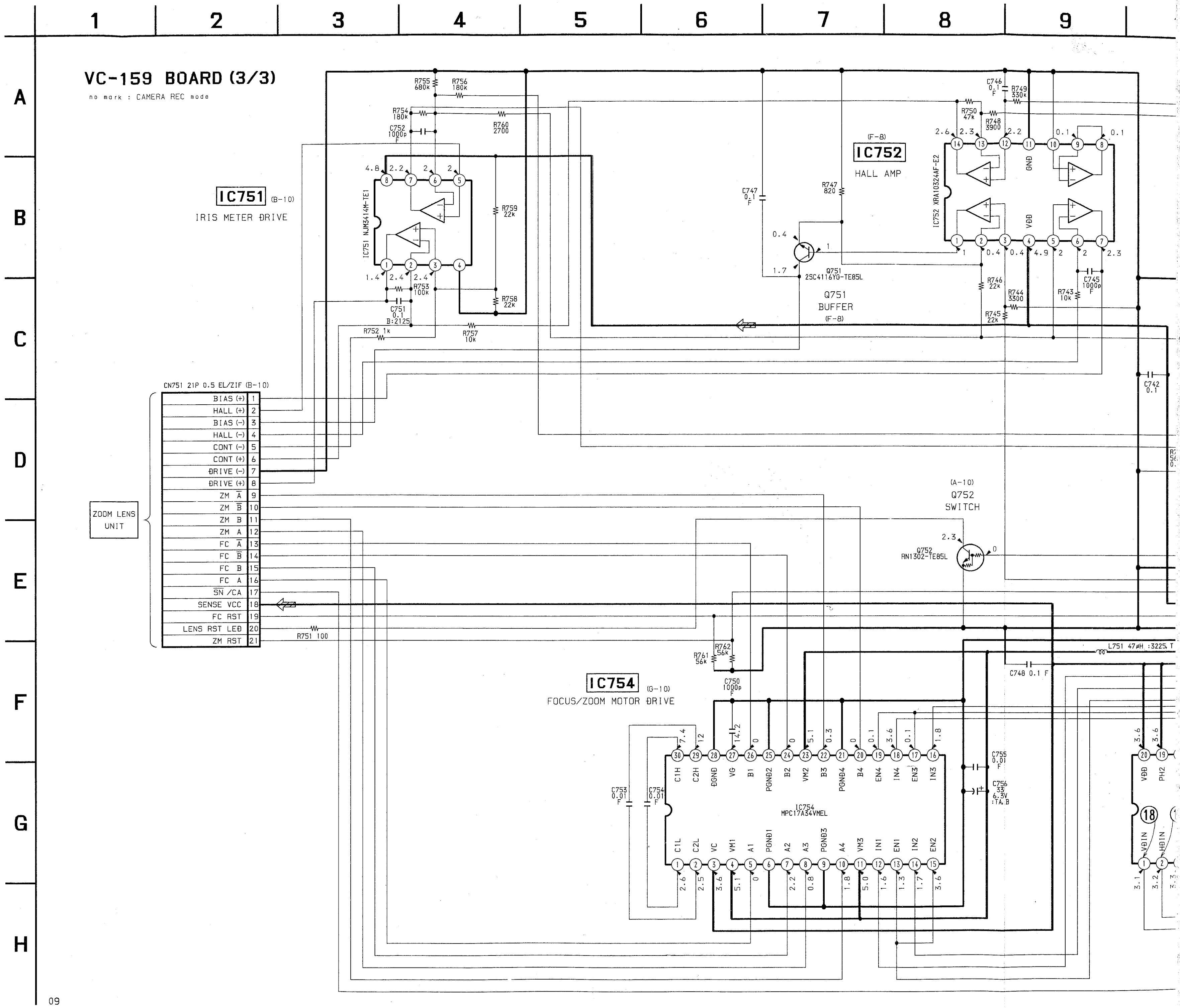
VC-159 BOARD(3/3)



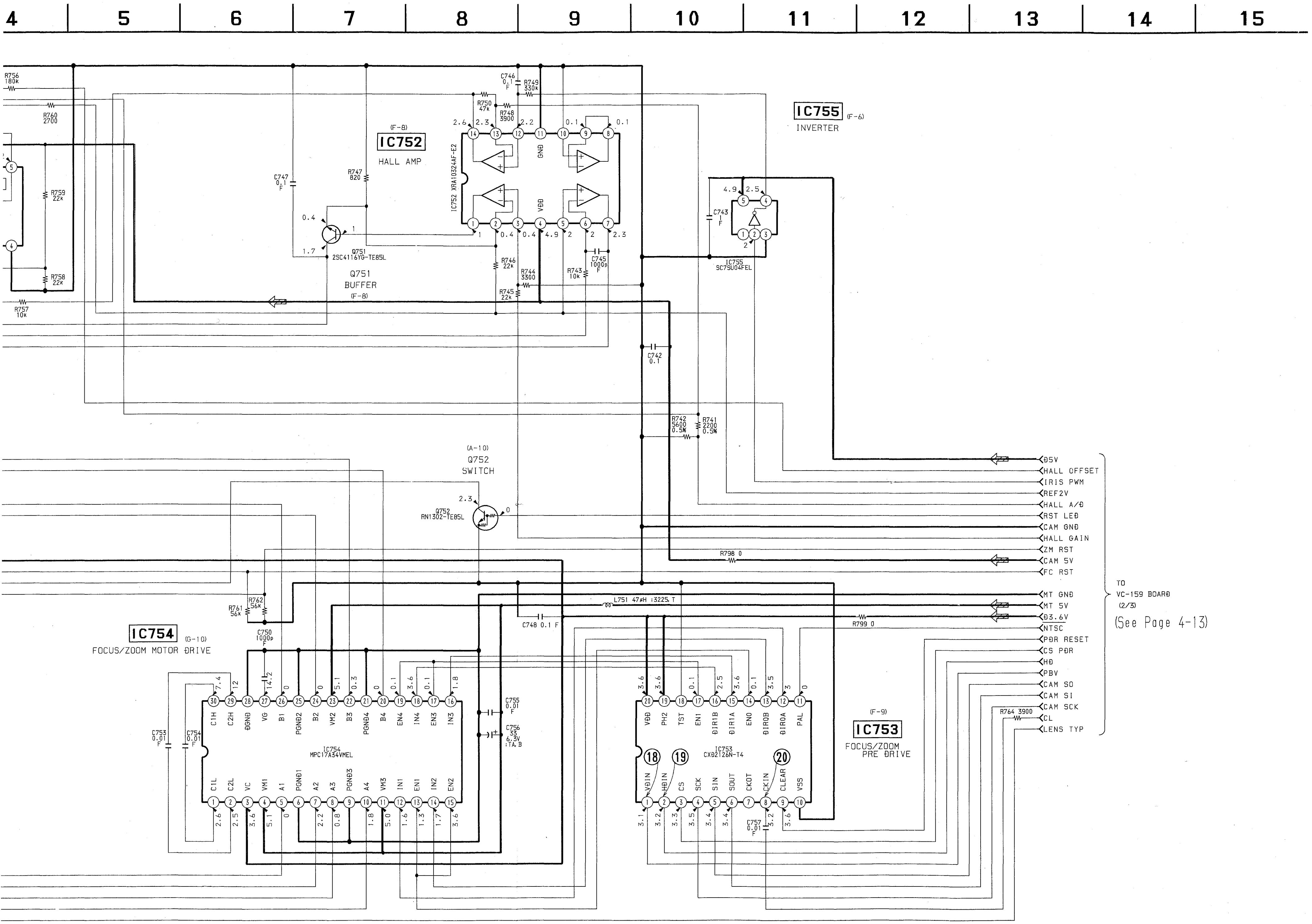
VC-159 (LENS DRIVE) SCHEMATIC DIAGRAM

— Ref. No. VC-159 BOARD: 2,000 series —

- Refer to page 4-7 for Printed Wiring Board.


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
G
H
VC-159 BOARD (3/3)
no mark : CAMERA REC mode
IC751 (B-10)
IRIS METER DRIVE
IC751 NJM3414M-TE1
R755 680k
R756 180k
R754 180k
C752 1000p F
R760 2700
R759 22k
R758 22k
R753 100k
C751 0.1 B:2125
R752 1k
R757 10k
CN751 21P 0.5 EL/ZIF (B-10)
BIAS (+) 1
HALL (+) 2
BIAS (−) 3
HALL (−) 4
CONT (−) 5
CONT (+) 6
DRIVE (−) 7
DRIVE (+) 8
ZM A̅ 9
ZM B̅ 10
ZM B 11
ZM A 12
FC A̅ 13
FC B̅ 14
FC B 15
FC A 16
S̅N̅ /CA 17
SENSE VCC 18
FC RST 19
LENS RST LED 20
ZM RST 21
ZOOM LENS UNIT
R751 100
C747 0.1 F
R747 820
Q751 2SC4116YG-TE85L
Q751 BUFFER (F-8)
(F-8)
IC752
HALL AMP
IC752 XRA10324AF-E2
GND
VDD
C746 0.1 F
R749 330k
R750 47k
R748 3900
R746 22k
R744 3300
R745 22k
R743 10k
C745 1000p F
C742 0.1
(A-10)
Q752
SWITCH
Q752 RN1302-TE85L
IC754 (G-10)
FOCUS/ZOOM MOTOR DRIVE
IC754 MPC17A34VMEL
R761 56k
R762 56k
C750 1000p F
C753 0.01 F
C754 0.01 F
C755 0.01 F
C756 33 6.3V :TA, B
C748 0.1 F
L751 47μH :3225, T
C1H
C2H
DGND
VG
B1
PGND2
B2
VM2
B3
PGND4
B4
EN4
IN4
EN3
IN3
C1L
C2L
VC
VM1
A1
PGND1
A2
A3
PGND3
A4
VM3
IN1
EN1
IN2
EN2
VDD
PH2
VDIN
HDIN
18
09

- Refer to page 4-7 for Printed Wiring Board.


4
5
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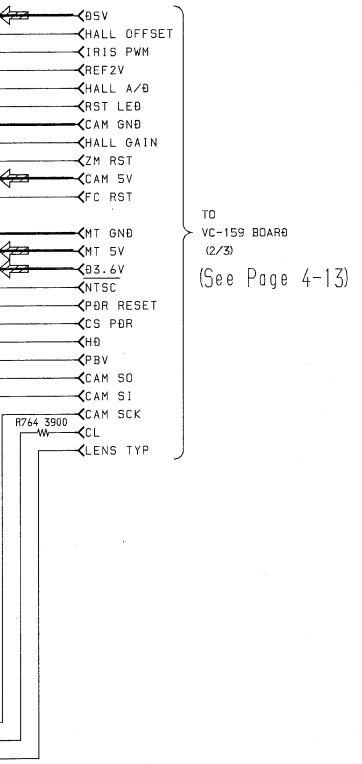
13
14
15
IC752 (F-8) HALL AMP
IC752 XRA10524AF-E2
Q751 BUFFER (F-8)
Q751 2SC4116YG-TE85L
IC755 (F-6) INVERTER
IC755 SC7SU04FEL
Q752 (A-10) SWITCH
Q752 RN1302-TE85L
IC754 (G-10) FOCUS/ZOOM MOTOR DRIVE
IC754 MPC17A34VMEL
IC753 (F-9) FOCUS/ZOOM PRE DRIVE
IC753 CX02126N-T4
L751 47µH :3225 T
R798 0
R799 0
R764 3900
C748 0.1 F
B5V
HALL OFFSET
IRIS PWM
REF2V
HALL A/G
RST LED
CAM GND
HALL GAIN
ZM RST
CAM 5V
FC RST
MT GND
MT 5V
D3.6V
NTSC
PDR RESET
CS PDR
HD
PBV
CAM SO
CAM SI
CAM SCK
CL
LENS TYP
TO VC-159 BOARD (2/3)
(See Page 4-13)

13 14 15

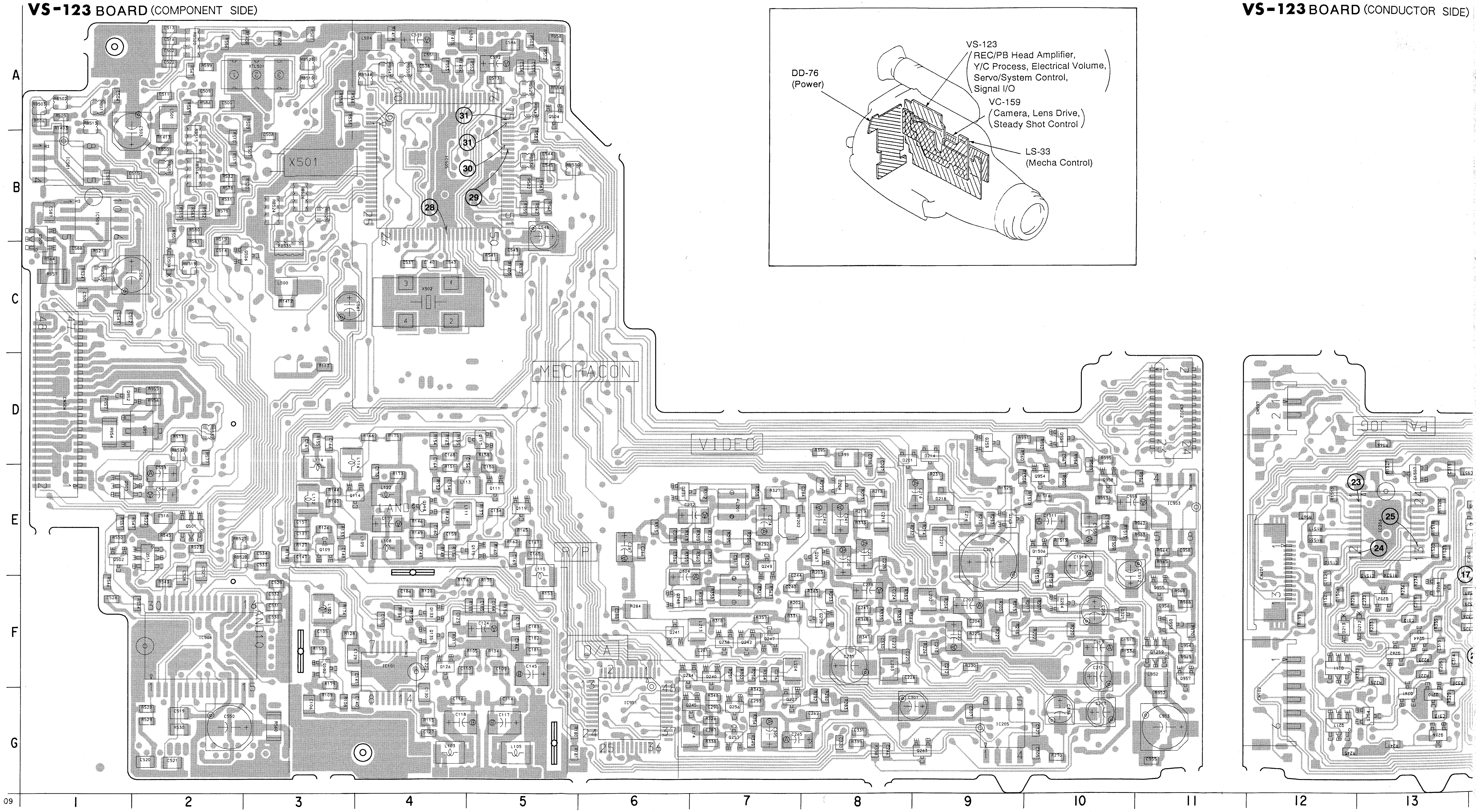

D5V
HALL OFFSET
IRIS PWM
REF2V
HALL A/D
RST LED
CAM GND
HALL GAIN
ZM RST
CAM 5V
FC RST
MT GND
MT 5V
D3.6V
NTSC
PDR RESET
CS PDR
HD
PBV
CAM SO
CAM SI
CAM SCK
R764 3900
CL
LENS TYP
TO
VC-159 BOARD
(2/3)
(See Page 4-13)

VS-123 (REC/PB HEAD AMPLIFIER, Y/C PROCESS, ELECTRIC VOLUME, SERVO/SYSTEM CONTROL, SIGNAL I/O) PRINTED WIRING BOARD

— Ref. No. VS-123 BOARD: 10,000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.

• ● : Through hole is omitted.


VS-123 BOARD (COMPONENT SIDE)
VS-123 BOARD (CONDUCTOR SIDE)
VS-123
REC/PB Head Amplifier,
Y/C Process, Electrical Volume,
Servo/System Control,
Signal I/O
DD-76
(Power)
VC-159
Camera, Lens Drive,
Steady Shot Control
LS-33
(Mecha Control)
MECHACON
VIDEO
LAND
R/P
D/A
PAL JOG
X501
X502
XTL501
IC101
IC205
IC951
IC953
28
29
30
31
23
24
25
17
A
B
C
D
E
F
G
1
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4
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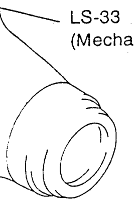
6
7
8
9
10
11
12
13

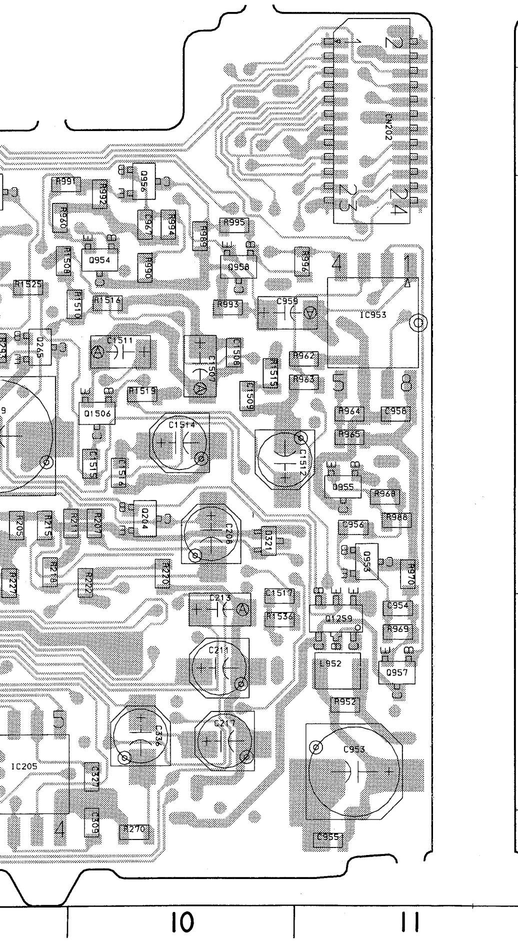
the part isn't mounted in this model
n.

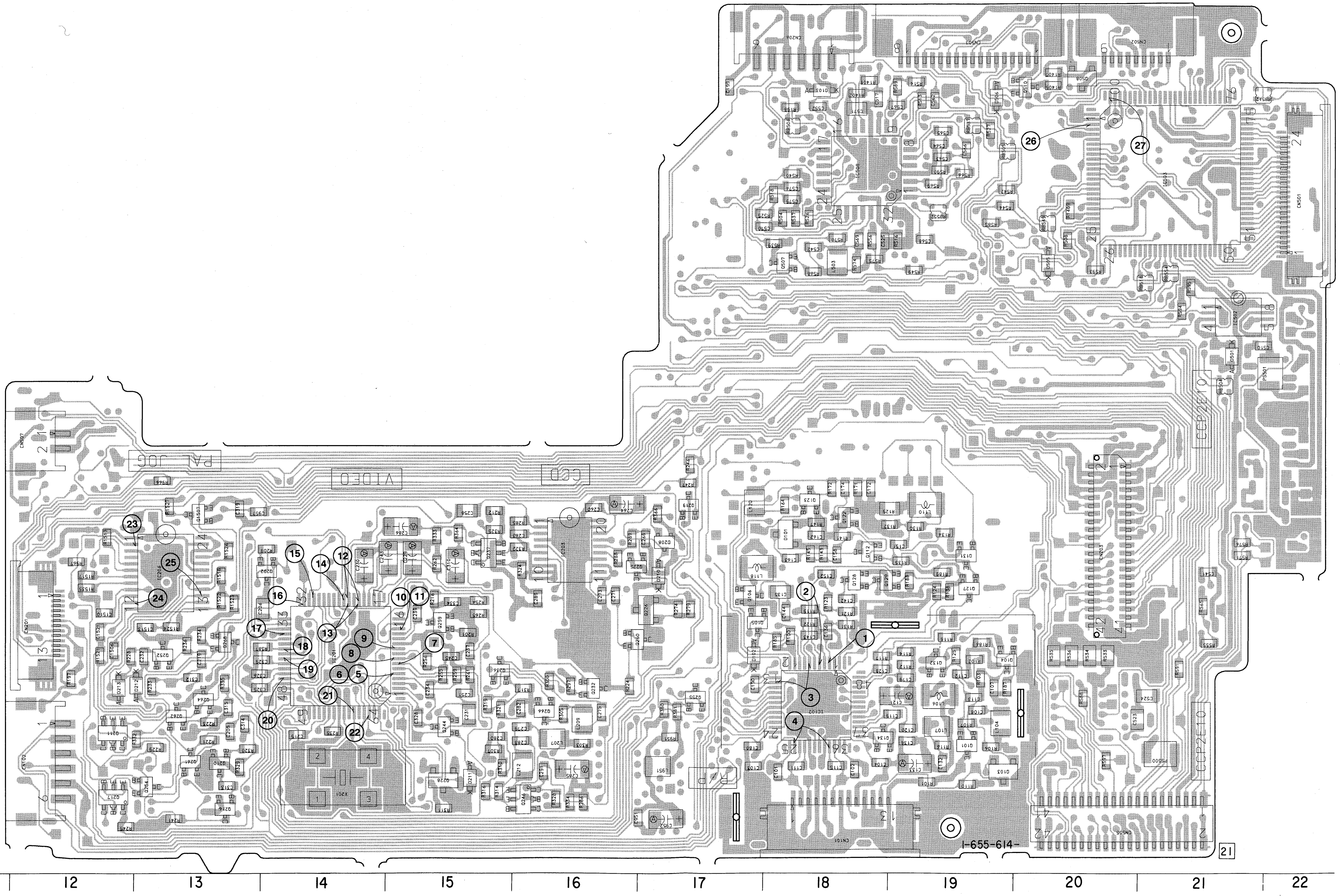
- ● : Through hole is omitted.

VS-123 BOARD (CONDUCTOR SIDE)

3
C/PB Head Amplifier,
Process, Electrical Volume,
vo/System Control,
al I/O
VC-159
Camera, Lens Drive,
Steady Shot Control


LS-33
(Mecha Control)




VIDEO
CCD
1-655-614-
21
12
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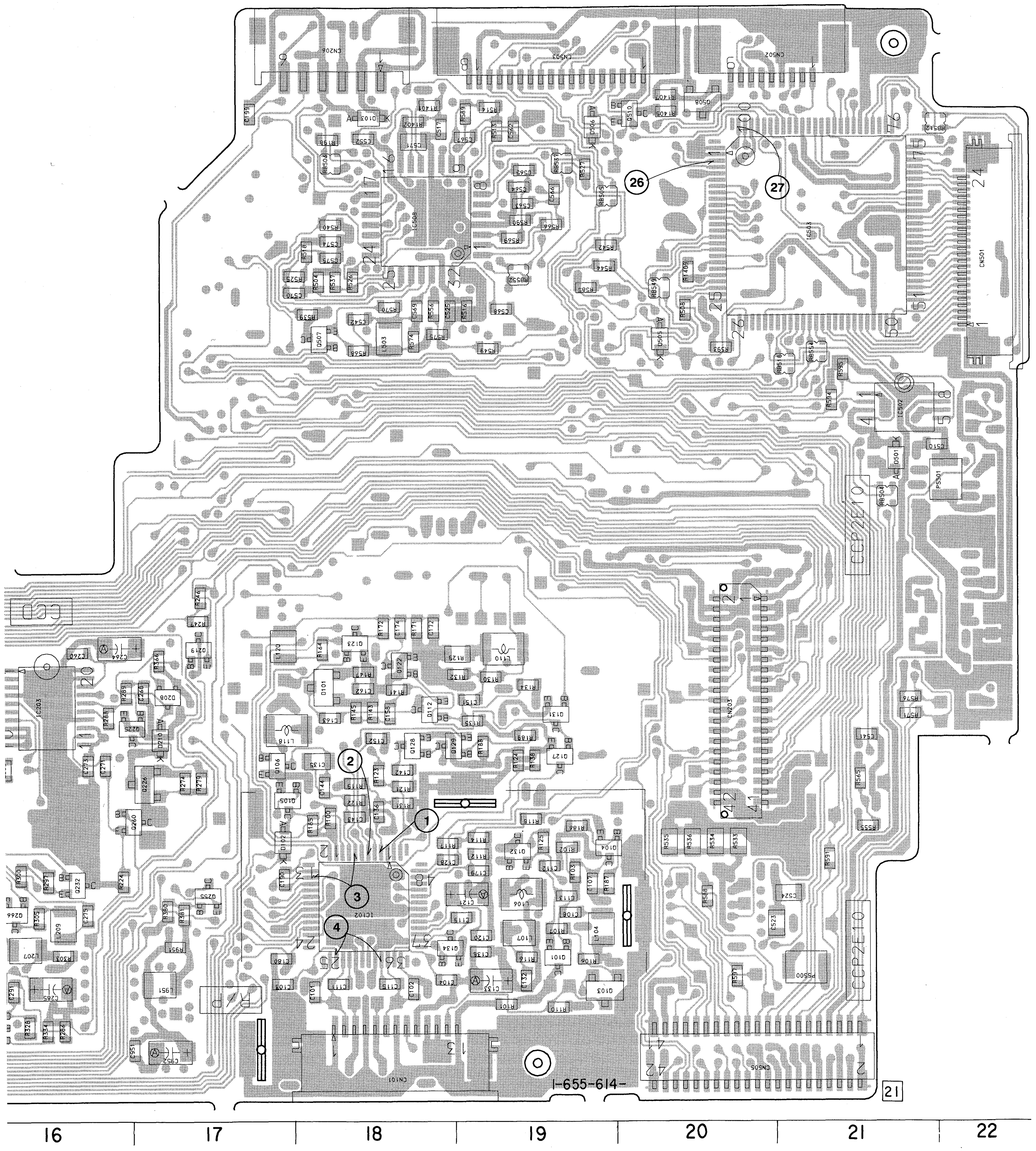
22

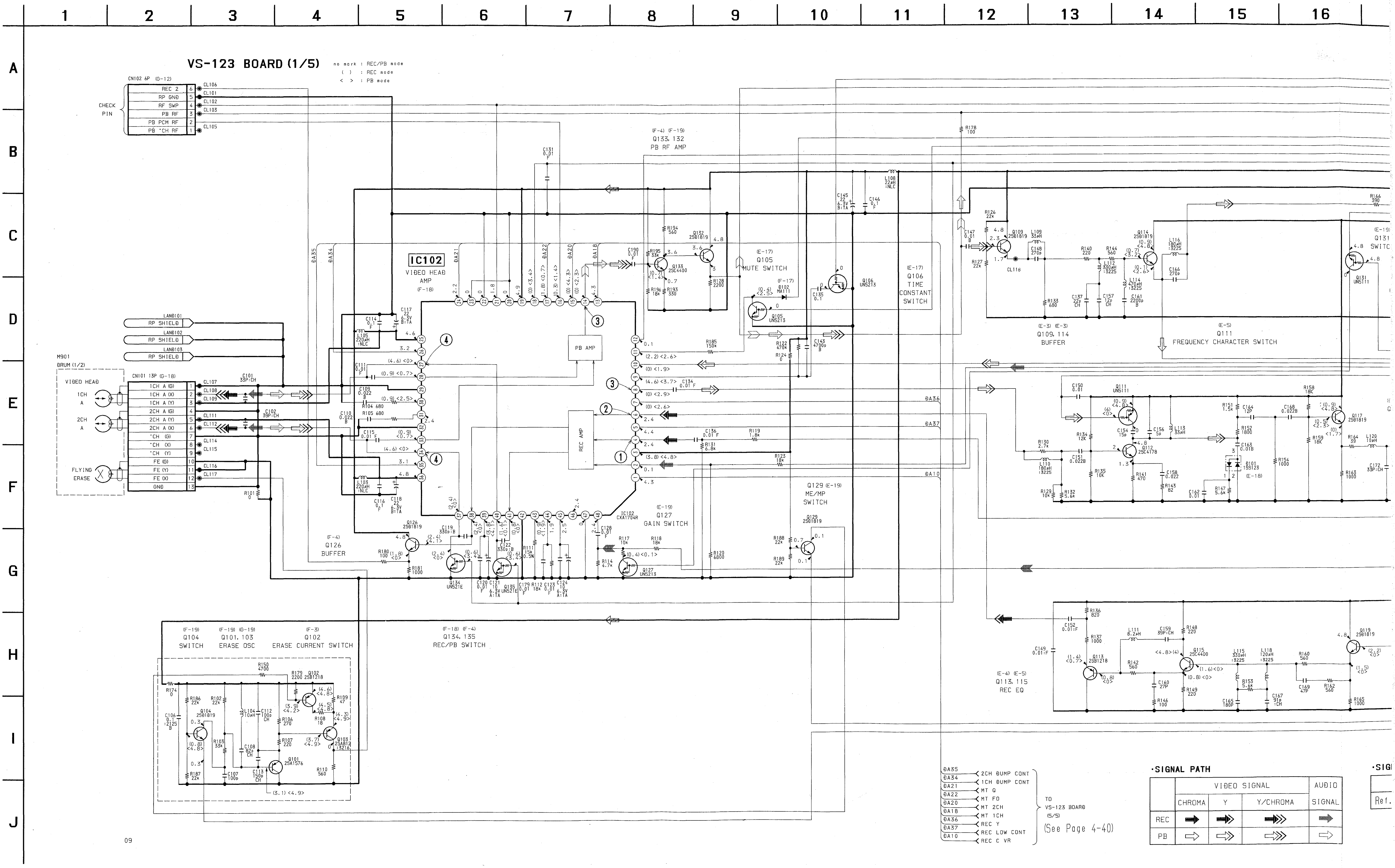


VS-123 BOARD

C101	G-18
C102	G-18
C106	G-3
C107	F-19
C108	F-19
C109	F-5
C110	F-4
C111	G-18
C112	F-19
C113	F-19
C114	G-5
C115	G-18
C116	G-4
C117	G-5
C118	G-4
C119	F-19
C120	F-19
C121	F-19
C122	F-4
C123	F-4
C124	F-5
C128	F-18
C131	F-5
C134	E-5
C135	E-18
C136	F-18
C137	E-3
C143	F-18
C145	F-5
C146	F-5
C147	E-3
C148	E-3
C149	E-4
C150	E-5
C151	E-19
C152	E-18
C154	E-4
C156	D-4
C157	E-3
C158	E-18
C159	E-4
C160	E-4
C161	D-3
C162	E-18
C163	E-18
C164	D-4
C165	E-5
C166	D-3
C167	E-5
C168	D-4
C169	E-5
C172	D-18
C179	F-19
C190	F-17
C204	F-9
C205	F-13
C206	E-14
C207	E-8
C208	F-10
C209	E-9
C210	F-9
C211	F-10
C212	F-9
C213	F-10
C214	E-9
C215	F-14
C216	E-9
C217	G-10
C218	E-8
C219	F-13
C220	E-8
C222	F-9
C227	E-8
C228	E-8
C229	E-15
C230	E-14
C231	F-15
C232	F-13
C234	F-15
C235	F-8
C238	F-8
C239	E-15
C240	F-7
C241	E-8
C242	E-8
C243	E-15
C244	F-7
C245	F-15
C246	G-8
C247	F-8
C251	F-15
C258	E-15
C262	G-8
C263	E-16
C264	E-16
C268	E-17
C271	E-16
C273	E-16
C274	E-7
C275	F-16
C276	F-7
C278	E-6
C279	F-16
C281	F-7
C282	F-16
C283	F-16
C284	E-8
C285	G-16
C286	E-15
C287	G-7
C288	F-6
C289	E-16
C290	G-7
C291	G-16
C299	G-7
C301	G-9
C304	F-6
C305	G-7
C306	E-6
C307	G-9
C310	E-15
C311	E-7
C312	F-13
C319	E-13
C320	G-8
C328	F-15
C331	G-8
C500	A-2
C501	B-1
C502	A-2
C503	A-2
C504	A-1
C506	C-2
C507	B-3
C508	B-3
C509	A-2
C510	C-22
C511	A-2
C512	C-1
C513	A-2
C514	C-2
C515	B-2
C516	A-2
C518	E-2
C519	G-2
C521	G-2
C522	A-2
C523	F-21
C524	F-21
C525	B-18
C526	F-1
C527	E-2
C528	F-2
C529	F-3
C530	F-3
C531	F-3
C532	F-3
C533	E-3
C534	E-3
C535	A-5
C536	A-5
C537	C-4
C539	A-4
C540	C-4
C541	E-21
C543	C-4
C544	B-5
C545	B-5
C546	A-5
C547	C-1
C548	B-5
C550	G-2
C559	E-2
C560	E-2
C561	C-3
C562	A-19
C563	B-19
C564	B-19
C565	B-19
C566	B-19
C567	A-19
C568	B-19
C569	B-18
C570	B-18
C571	A-18
C573	A-5
C951	G-17
C955	G-11
C967	D-10
C1506	F-12
C1508	E-10
C1509	E-10
C1510	E-12
C1511	E-10
C1512	F-10
C1513	F-13
C1514	E-10
C1515	F-10
C1516	F-10
C1521	F-12
CN101	G-18
CN102	G-12
CN201	F-12
CN202	D-11
CN203	E-20
CN206	A-18
CN502	A-21
CN503	A-19
CN504	D-1
CN505	G-20
D101	E-18
D102	F-17
D201	D-8
D204	E-8
D212	F-13
D214	D-9
D218	E-9
D321	F-10
D501	C-21
D504	C-2
D505	C-20
FL201	E-7
FL202	F-7
IC102	F-18
IC201	F-14
IC203	E-16
IC205	G-9
IC206	E-13
IC501	B-1
IC502	C-21
IC503	B-21
IC505	B-4
IC506	F-2
IC508	B-18
IC951	G-6
L103	G-4
L104	F-19
L105	G-5
L108	E-4
L109	E-4
L110	E-19
L111	E-4
L112	E-3
L113	E-4
L114	E-3
L115	F-5
L116	E-3
L118	E-17
L120	E-17
L204	F-7
L207	F-16
L209	F-16
L212	G-16
L213	F-7
L214	G-7
L503	C-18
PS500	G-21
PS501	C-22
Q101	F-19
Q102	F-3
Q103	G-19
Q104	F-19
Q105	E-17
Q106	E-17
Q109	E-3
Q111	E-5
Q112	E-18
Q113	E-4
Q114	E-3
Q115	E-5
Q117	D-5
Q119	E-5
Q126	F-4
Q127	E-19
Q129	E-19
Q131	E-19
Q132	F-19
Q133	F-4
Q134	F-18
Q135	F-4
Q202	E-14
Q204	F-10
Q211	F-12
Q216	G-13
Q217	G-12
Q219	E-17
Q225	E-16
Q232	F-16
Q234	F-6
Q235	E-6
Q236	F-15
Q237	E-15
Q238	F-7
Q240	F-7
Q241	F-6
Q242	F-7
Q244	F-15
Q246	G-16
Q247	F-7
Q248	F-6
Q249	E-7
Q252	F-13
Q253	D-9
Q254	G-13
Q255	F-17
Q256	G-7
Q257	G-7
Q258	F-8
Q259	E-15
Q260	F-16
Q261	G-13
Q262	F-13
Q263	G-9
Q264	F-13
Q266	F-16
Q267	E-8
Q268	F-13
Q501	E-2
Q503	E-1
Q504	A-5
Q506	C-3
Q507	C-18
Q511	E-2
Q951	D-2
Q952	D-1
Q954	E-10
Q956	D-10
Q958	E-10
Q1506	E-10
Q1507	E-13
R101	G-19
R102	F-19
R103	F-19
R104	F-5
R105	F-5
R106	F-19
R107	F-19
R108	G-3
R109	G-3
R110	G-19
R111	F-4
R112	F-19
R114	F-19
R117	F-18
R118	F-19
R119	E-18
R120	F-4
R122	E-18
R123	E-18
R124	E-19
R126	E-3
R127	E-3
R128	F-3
R129	E-19
R130	E-19
R131	F-18
R132	E-19
R133	E-3
R134	E-19
R135	E-19
R136	E-4
R137	E-5
R140	E-3
R141	E-18
R142	E-4
R143	E-18
R144	E-3
R146	E-4
R147	E-18
R148	E-4
R149	E-4
R150	F-3
R151	E-4
R152	E-4
R153	F-5
R154	D-4
R158	D-5
R159	D-4
R160	E-5
R162	E-5
R163	D-4
R164	E-18
R165	E-5
R166	D-4
R171	D-18
R173	E-4
R174	F-3
R175	D-4
R178	E-3
R179	G-3
R180	G-5
R181	G-5
R185	F-18
R186	F-19
R187	F-19
R188	E-19
R189	E-19
R193	F-5
R194	F-4
R195	F-4
R196	F-5
R197	F-12
R201	F-15
R202	F-7
R203	F-8
R204	F-9
R205	F-9
R207	F-10
R209	E-14
R210	E-9
R211	F-10
R212	E-15
R213	E-8
R214	E-9
R215	F-9
R216	E-15
R218	F-9
R219	E-8
R221	F-13
R223	F-13
R224	F-16
R226	F-9
R228	F-12
R230	F-9
R231	E-9
R232	E-8
R233	F-13
R234	F-13
R235	F-14
R236	F-13
R241	G-13
R245	G-12
R246	D-17
R247	D-17
R253	F-8
R255	F-15
R256	F-15
R259	F-15
R261	F-15
R263	F-8
R265	E-15
R272	E-8
R273	E-8
R274	E-17
R279	E-17
R283	G-8
R284	F-6
R285	E-16
R286	G-16
R288	E-16
R289	E-16
R291	F-7
R292	E-7
R296	F-7
R297	F-16
R300	F-16
R302	F-7
R303	F-16
R304	F-7
R305	F-16
R307	F-15
R308	E-7
R309	E-7
R311	G-15
R312	E-7
R313	E-6
R315	E-6
R316	G-15
R317	F-16
R318	F-7
R319	F-15
R321	F-15
R322	E-16
R323	E-7
R324	E-16
R325	E-15
R328	G-16
R331	F-7
R332	F-13
R333	E-15
R334	G-16
R338	G-7
R339	F-8
R342	G-7
R347	F-8
R348	G-7
R349	G-7
R354	G-7
R355	F-7
R356	E-7
R357	F-7
R358	F-7
R359	E-6
R360	E-7
R361	F-7
R362	E-7
R363	F-7
R366	E-17
R368	F-8
R373	E-8
R380	F-17
R381	F-17
R383	F-8
R387	F-14
R395	D-8
R398	G-8
R399	G-8
R501	B-2
R502	B-5
R503	A-5
R505	A-1
R506	A-1
R507	A-3
R508	B-20
R509	A-3
R510	B-2
R511	A-5
R512	A-5
R513	A-19
R514	A-19
R515	B-2
R516	B-19
R517	B-2
R518	B-18
R519	B-2
R520	B-3
R522	E-2
R523	E-2
R525	B-18
R526	B-18
R527	B-19
R528	G-2
R529	G-2
R530	G-2
R531	B-2
R532	B-2
R533	F-20
R534	F-20
R535	F-20
R536	F-20
R537	B-18
R538	A-3
R539	B-18
R540	B-18
R541	C-5
R542	B-19
R543	F-2
R544	B-19
R546	F-1
R548	A-3
R549	C-19
R552	A-5
R553	A-4
R555	F-21
R556	B-18
R558	A-5
R560	G-3
R561	B-5
R562	B-5
R563	B-5
R565	E-21
R566	B-19
R567	A-2
R569	B-19
R570	B-18
R572	C-5
R573	D-2
R577	D-2
R578	B-2
R579	B-2
R580	B-2
R581	C-2
R582	B-5
R583	B-2
R584	A-5
R585	B-19
R586	A-2
R587	A-2
R588	F-20
R589	A-19
R590	B-19
R591	F-21
R592	B-2
R593	C-20
R594	C-21
R595	C-21
R596	A-2
R597	G-20
R599	A-2
R951	F-17
R952	G-11
R954	D-1
R955	D-2
R956	D-2
R957	D-1
R960	D-9
R966	D-13
R989	E-10
R990	E-10
R991	D-9
R992	D-10
R993	E-10
R994	D-10
R995	D-10
R996	E-11
R1400	C-5
R1401	A-18
R1403	A-1
R1404	A-3
R1406	A-4
R1408	A-3
R1412	C-3
R1413	B-2
R1414	A-4
R1415	A-4
R1508	E-9
R1510	E-10
R1515	E-10
R1516	E-10
R1519	E-10
R1521	F-12
R1524	F-13
R1525	E-9
R1526	E-13
R1536	F-10
RB502	A-1
RB503	A-1
RB504	D-21
RB505	B-19
RB506	B-18
RB510	A-3
RB512	A-21
RB513	A-1
RB515	B-2
RB516	B-2
RB518	C-21
RB519	C-2
RB520	A-2
RB523	A-3
RB524	B-3
RB525	B-3
RB526	B-3
RB527	E-2
RB528	E-2
RB529	A-5
RB530	B-5
RB531	D-2
RB532	D-2
RB535	C-3
RB536	B-5
RB537	B-19
RB542	A-5
RB543	A-4
RB544	A-4
RB549	B-20
RB550	A-4
RB552	B-19
RB554	C-21
RV202	E-7
X201	G-14
X501	B-3
X502	C-4
XTL501	A-3

VS-123 (REC/PB HEAD AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. VS-123 BOARD: 10,000 series —



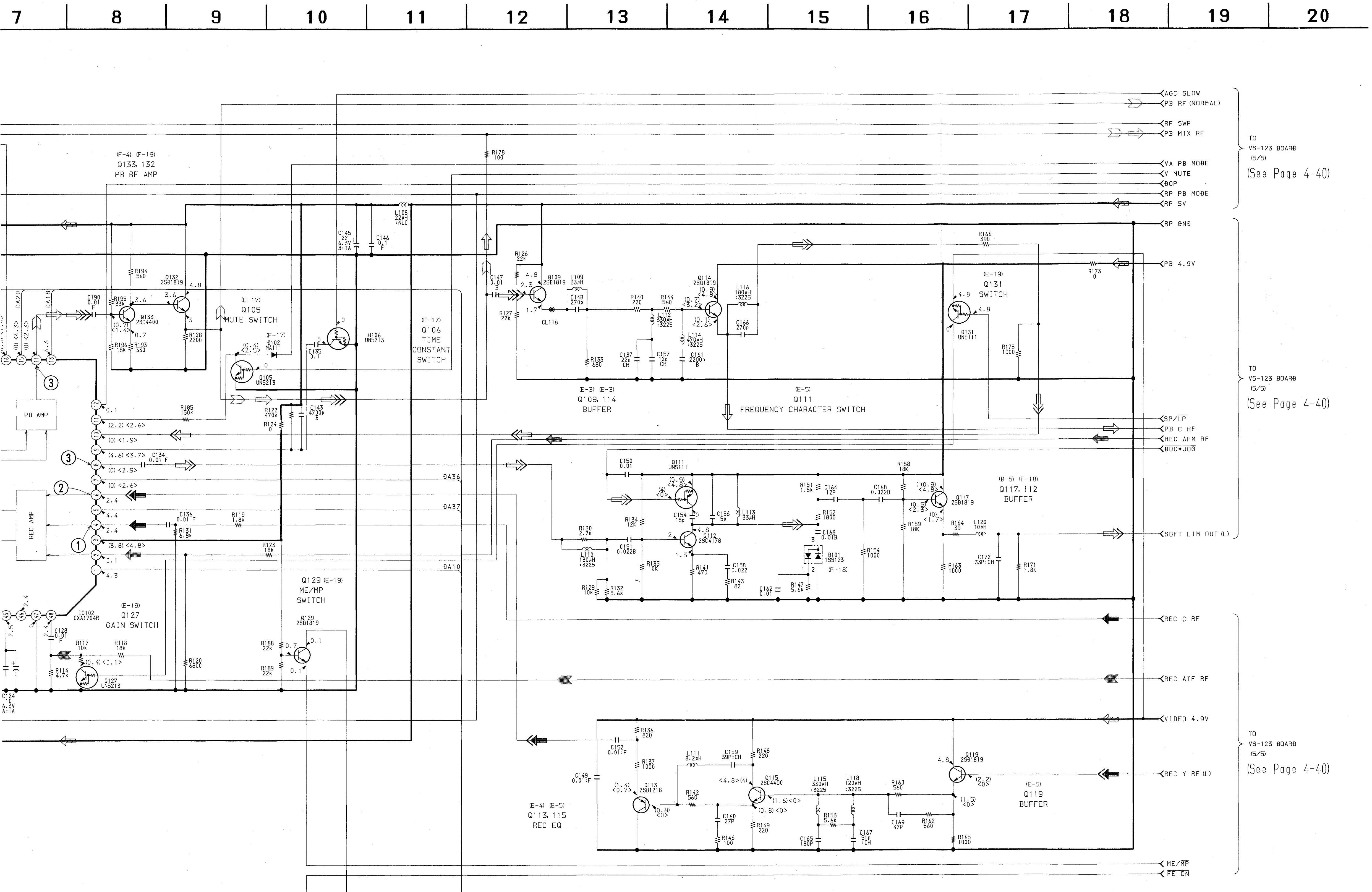
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
VS-123 BOARD (1/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CN102 6P (G-12)
REC 2
RP GND
RF SWP
PB RF
PB PCM RF
PB 'CH RF
CHECK PIN
CL106
CL101
CL102
CL103
CL105
LAND101 RP SHIELD
LAND102 RP SHIELD
LAND103 RP SHIELD
M901 DRUM (1/2)
VIDEO HEAD
1CH A
2CH A
FLYING ERASE
CN101 13P (G-18)
1CH A (G)
1CH A (X)
1CH A (Y)
2CH A (G)
2CH A (Y)
2CH A (X)
'CH (G)
'CH (X)
'CH (Y)
FE (G)
FE (Y)
FE (X)
GND
IC102
VIDEO HEAD AMP
(F-18)
PB AMP
REC AMP
IC102 CXA1704R
(F-4) (F-19)
Q133, 132
PB RF AMP
(E-17)
Q105
MUTE SWITCH
(E-17)
Q106
TIME CONSTANT SWITCH
Q129 (E-19)
ME/MP SWITCH
(E-19)
Q127
GAIN SWITCH
(F-4)
Q126
BUFFER
(E-3) (E-3)
Q109, 114
BUFFER
(E-5)
Q111
FREQUENCY CHARACTER SWITCH
(F-19)
Q104
SWITCH
(F-19) (G-19)
Q101, 103
ERASE OSC
(F-3)
Q102
ERASE CURRENT SWITCH
(F-18) (F-4)
Q134, 135
REC/PB SWITCH
(E-4) (E-5)
Q113, 115
REC EQ
ØA35 2CH DUMP CONT
ØA34 1CH DUMP CONT
ØA21 MT Q
ØA22 MT FO
ØA20 MT 2CH
ØA18 MT 1CH
ØA36 REC Y
ØA37 REC LOW CONT
ØA10 REC C VR
TO VS-123 BOARD (5/5)
(See Page 4-40)
09

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡➡	➡➡➡	➡
PB	⇨	⇨⇨	⇨⇨⇨	⇨

·SIG

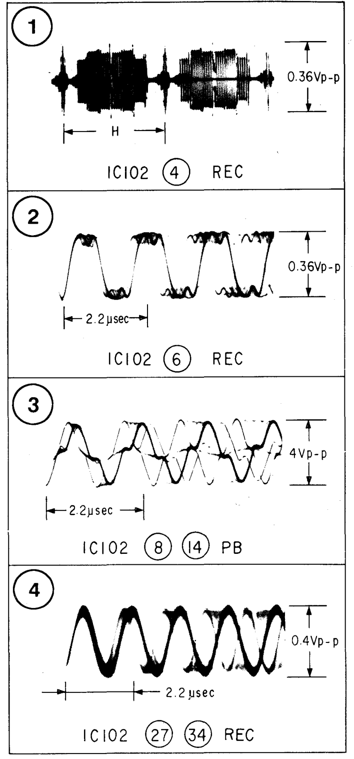
Ref.


7
8
9
10
11
12
13
14
15
16
17
18
19
20
AGC SLOW
PB RF (NORMAL)
RF SWP
PB MIX RF
VA PB MODE
V MUTE
BOP
RP PB MODE
RP 5V
TO VS-123 BOARD (5/5) (See Page 4-40)
RP GND
PB 4.9V
SP/LP
PB C RF
REC AFM RF
DOC•JOG
SOFT LIM OUT (L)
REC C RF
REC ATF RF
VIDEO 4.9V
REC Y RF (L)
ME/MP
FE ON
(F-4) (F-19) Q133, 132 PB RF AMP
(E-17) Q105 MUTE SWITCH
(E-17) Q106 TIME CONSTANT SWITCH
(E-3) (E-3) Q109, 114 BUFFER
(E-5) Q111 FREQUENCY CHARACTER SWITCH
(E-19) Q131 SWITCH
(D-5) (E-18) Q117, 112 BUFFER
(E-19) Q127 GAIN SWITCH
Q129 (E-19) ME/MP SWITCH
(E-4) (E-5) Q113, 115 REC EQ
(E-5) Q119 BUFFER
IC102 CXA1704R
PB AMP
REC AMP
DA36
DA37
DA10
L108 22μH
C145 22 6.3V
C146 0.1
R178 100
R126 22k
Q109 2SD1819
L109 33μH
C148 270p
R140 220
R144 560
L112 330μH
Q114 2SD1819
L116 180μH
R166 390
R173 0
Q131 UN5111
R175 1000
L114 470μH
C161 2200p
C164 270p
R133 680
C137 22p
C157 12p
Q111 UN5111
R158 18K
R151 1.5K
C164 12P
C168 0.0228
Q117 2SD1819
R152 1800
C163 0.018
D101 1SS123
R154 1000
R159 18K
R164 39
L120 10μH
C172 33P
R171 1.8K
R163 1000
Q112 2SC4178
L113 33μH
C156 5p
C154 15p
R134 12K
R130 2.7K
L110 180μH
C151 0.0228
R135 10K
R141 470
C158 0.022
R143 82
R147 5.6K
C162 0.01
R129 10K
R132 5.6K
C150 0.01
R136 820
C152 0.01
R137 1000
C149 0.01
Q113 2SB1218
L111 6.2μH
C159 39P
R148 220
Q115 2SC4400
R142 560
C160 27P
R146 100
R149 220
L115 330μH
L118 120μH
R153 5.6K
C165 180P
C167 91P
R160 560
C169 47P
R162 560
Q119 2SD1819
R165 1000
Q133 2SC4400
Q132 2SD1819
R194 560
R195 33K
C190 0.01
R196 18K
R193 330
R128 2200
D102 MA111
C135 0.1
Q105 UN5213
Q106 UN5213
R185 150K
R122 470K
R124 0
C143 4700p
C134 0.01
C136 0.01
R131 6.8K
R119 1.8K
R123 18K
R117 10K
R118 18K
R114 4.7K
Q127 UN5213
C128 0.01
R120 6800
R188 22K
R189 22K
Q129 2SD1819
C124 10 6.3V
C147 0.01
R127 22K
CL118
①
②
③

DA35 ⟨ 2CH DUMP CONT
DA34 ⟨ 1CH DUMP CONT
DA21 ⟨ MT Q
DA22 ⟨ MT FO
DA20 ⟨ MT 2CH
DA18 ⟨ MT 1CH
DA36 ⟨ REC Y
DA37 ⟨ REC LOW CONT
DA10 ⟨ REC C VR

TO VS-123 BOARD (5/5) (See Page 4-40)

VS-123 BOARD(1/5)



·SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡	➡⇨	➡
PB	⇨	⇨	⇨⇨	⇨

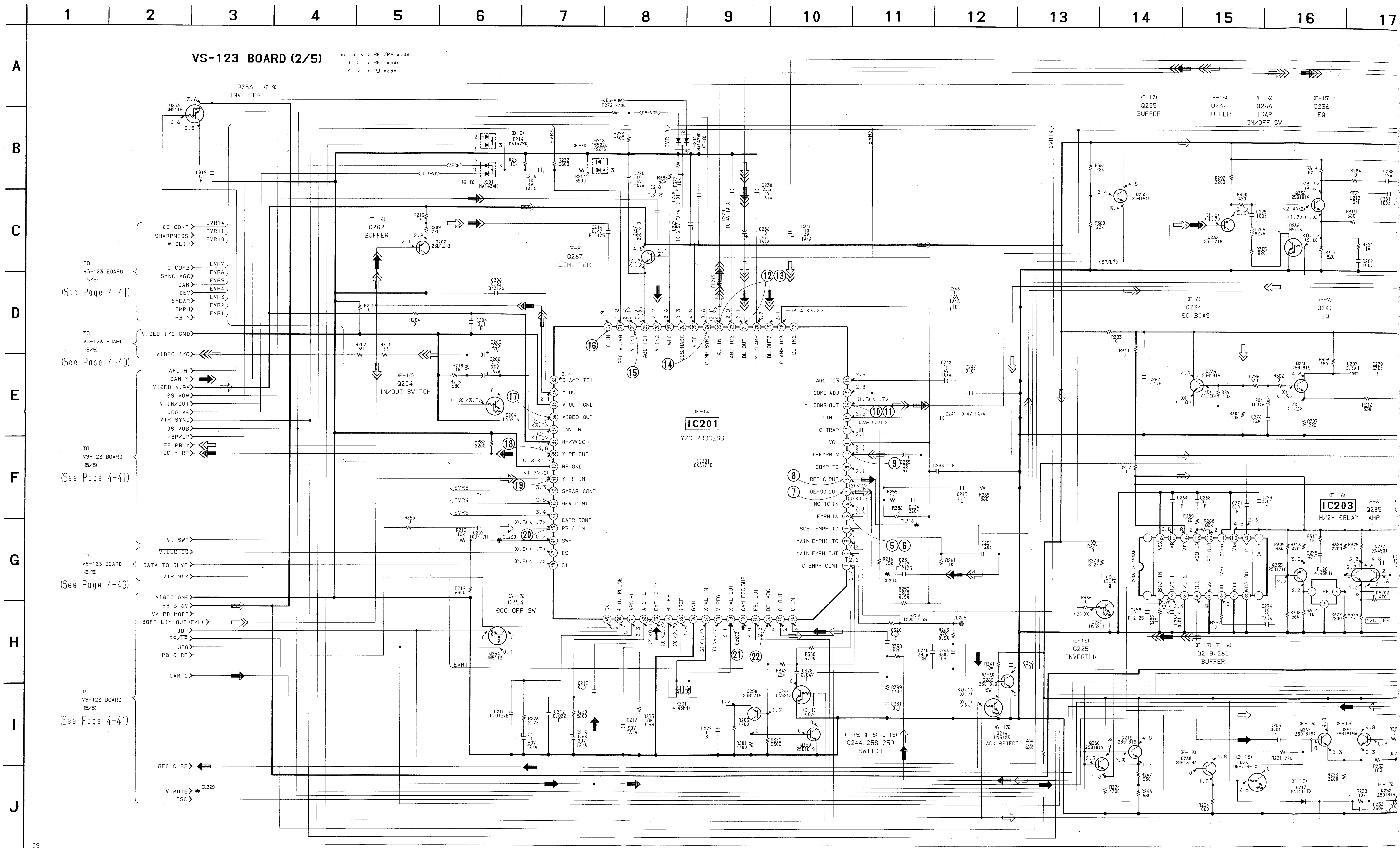
·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➡		⇨

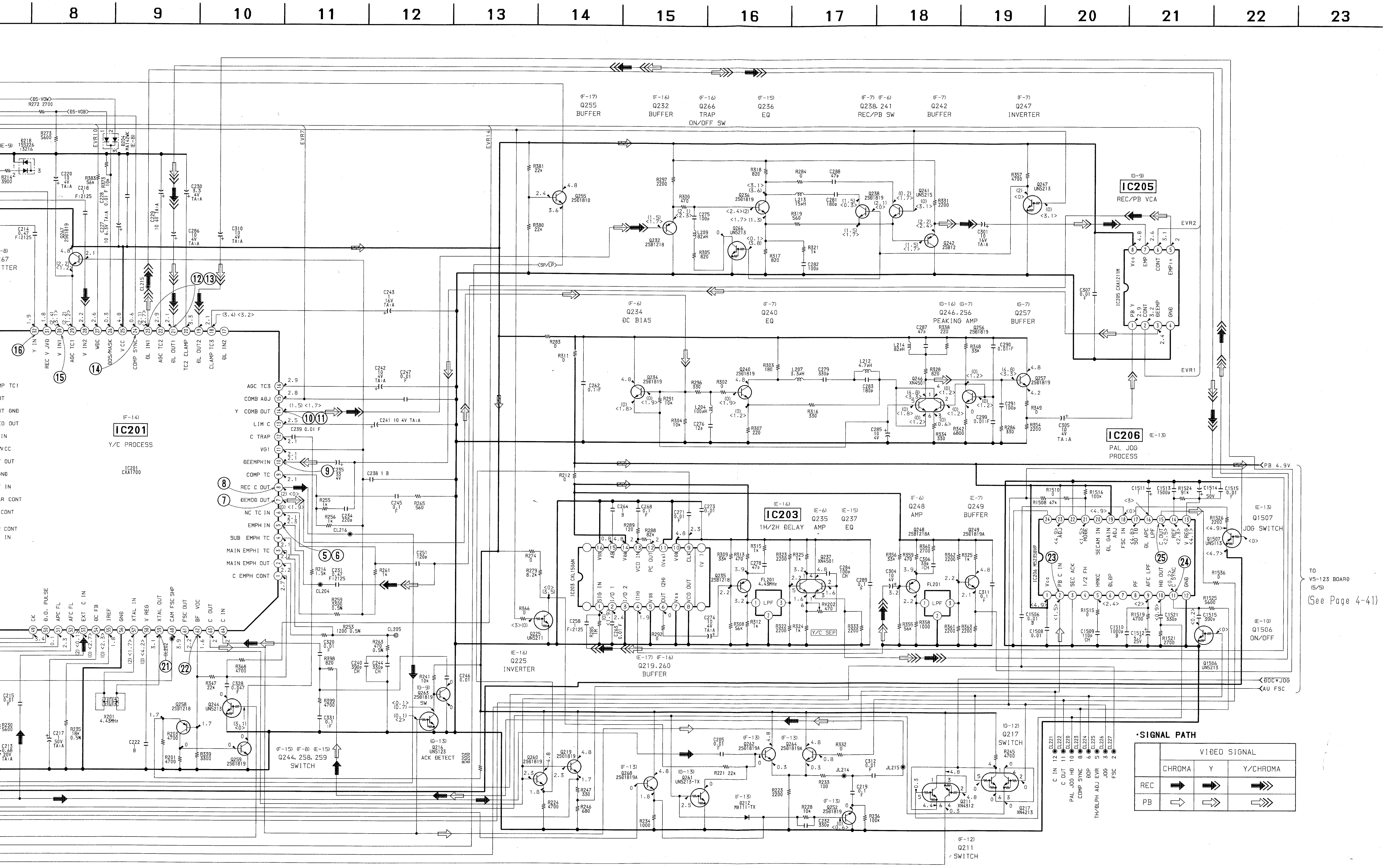
VS-123 (Y/C PROCESS) SCHEMATIC DIAGRAM

— Ref. No. VS-123 BOARD: 10,000 series —

- Refer to page 4-22 for Printed Wiring Board.


VS-123 BOARD (2/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
Q253 INVERTER
Q202 BUFFER
Q267 LIMITTER
Q204 IN/OUT SWITCH
Q254 DOC OFF SW
IC201 Y/C PROCESS
IC201 CXA1700
Q244, 258, 259 SWITCH
Q216 ACK DETECT
Q225 INVERTER
Q219, 260 BUFFER
Q255 BUFFER
Q232 BUFFER
Q266 TRAP ON/OFF SW
Q236 EQ
Q234 DC BIAS
Q240 EQ
IC203 1H/2H DELAY
Q235 AMP
TO VS-123 BOARD (5/5) (See Page 4-41)
TO VS-123 BOARD (5/5) (See Page 4-40)
TO VS-123 BOARD (5/5) (See Page 4-41)
TO VS-123 BOARD (5/5) (See Page 4-40)
TO VS-123 BOARD (5/5) (See Page 4-41)
CE CONT
SHARPNESS
W CLIP
C COMB
SYNC AGC
CAR
DEV
SMEAR
EMPH
PB Y
VIDEO I/O GND
VIDEO I/O
AFC H
CAM Y
VIDEO 4.9V
DS VOW
V IN/OUT
JOG VD
VTR SYNC
DS VOB
SP/LP
EE PB Y
REC Y RF
VI SWP
VIDEO CS
DATA TO SLVE
VTR SCK
VIDEO GND
SS 3.6V
VA PB MODE
SOFT LIM OUT (E/L)
BOP
SP/LP
JOG
PB C RF
CAM C
REC C RF
V MUTE
FSC
CLAMP TC1
Y OUT
V OUT GND
VIDEO OUT
INV IN
RF/W CC
Y RF OUT
RF GND
Y RF IN
SMEAR CONT
DEV CONT
CARR CONT
PB C IN
SWP
CS
SI
Y IN
REC V UVD
V IN1
AGC TC1
V IN2
WDC
DOS/MASK
V CC
COMP SYNC
DL IN1
AGC TC2
DL OUT1
TC2 CLAMP
DL OUT2
CLAMP TC3
DL IN2
AGC TC3
COMB ADJ
Y COMB OUT
LIM C
C TRAP
VG1
DEEMPHIN
COMP TC
REC C OUT
DEMOD OUT
NC TC IN
EMPH IN
SUB EMPH TC
MAIN EMPHI TC
MAIN EMPH OUT
C EMPH CONT
CK
D.O. PULSE
APC FL
AFC FL
EXT C IN
DC FB
IREF
GND
XTAL IN
V REG
XTAL OUT
CAM FSC SHP
FSC OUT
BF VDC
C OUT
C IN
X201 4.43MHz
FL201 4.43MHz
LPF
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J

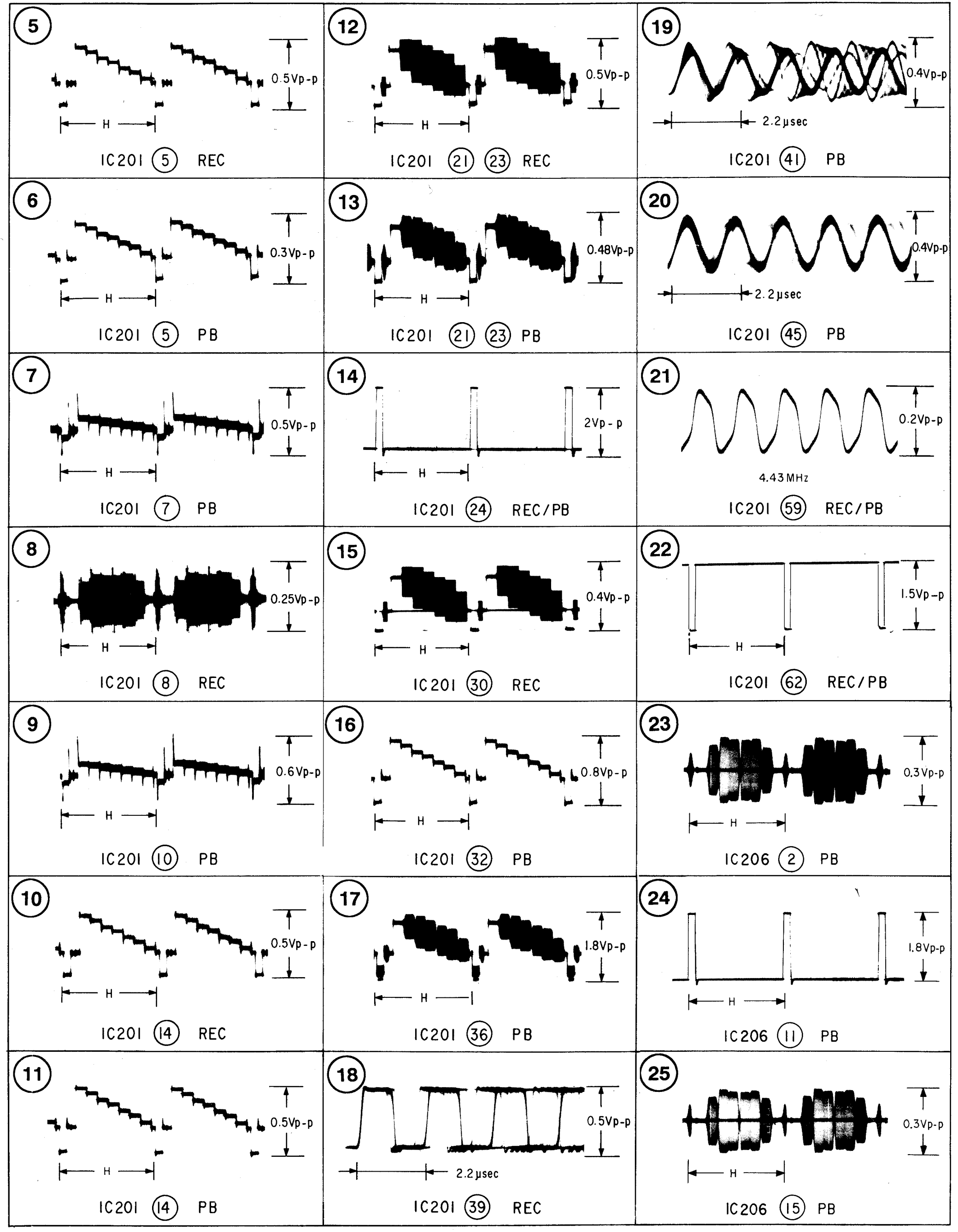
- Refer to page 4-22 for Printed Wiring Board.


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
(F-17) Q255 BUFFER
(F-16) Q232 BUFFER
(F-16) Q266 TRAP ON/OFF SW
(F-15) Q236 EQ
(F-7) (F-6) Q238, 241 REC/PB SW
(F-7) Q242 BUFFER
(F-7) Q247 INVERTER
(G-9) IC205 REC/PB VCA
IC205 CXA1211M
EVR1
EVR2
EVR7
EVR14
(F-6) Q234 DC BIAS
(F-7) Q240 EQ
(G-16) (G-7) Q246, 256 PEAKING AMP
(G-7) Q257 BUFFER
(F-14) IC201 Y/C PROCESS
IC201 CXA1700
AGC TC3
COMB ADJ
Y COMB OUT
LIM C
C TRAP
VG1
DEEMPHIN
COMP TC
REC C OUT
DEMOD OUT
NC TC IN
EMPH IN
SUB EMPH TC
MAIN EMPHI TC
MAIN EMPH OUT
C EMPH CONT
Y IN
REC V JVD
V IN1
AGC TC1
V IN2
VDC
DOS/MASK
COMP SYNC
V CC
DL IN1
AGC TC2
DL OUT1
TC2 CLAMP
DL OUT2
CLAMP TC3
DL IN2
CK
D.O. PULSE
APC FL
AFC FL
EXT C IN
DC FB
IREF
GND
XTAL IN
V REG
XTAL OUT
CAM FSC SHP
FSC OUT
BF VDC
C OUT
C IN
(E-16) IC203 1H/2H DELAY
IC203 CXL1506N
(E-6) Q235 AMP
(E-15) Q237 EQ
Y/C SEP
(F-6) Q248 AMP
(E-7) Q249 BUFFER
IC206 (E-13) PAL JOG PROCESS
IC206 M52358FP
(E-13) Q1507 JOG SWITCH
(E-10) Q1506 ON/OFF
Q1504 UN5213
(E-16) Q225 INVERTER
(E-17) (F-16) Q219, 260 BUFFER
(F-15) (F-8) (E-15) Q244, 258, 259 SWITCH
(G-13) Q216 UN5123 ACK DETECT
(G-9) Q263 2SD1819 SW
(G-12) Q217 SWITCH
(F-12) Q211 SWITCH
(F-13) Q212 MA111-TX
X201 4.43MHz
FL201 4.43MHz
<PB 4.9V
<DOC*JOG
<AU FSC
TO VS-123 BOARD (5/5)
(See Page 4-41)
C IN
C OUT
PAL JOG HD
COMP SYNC
DDP
TH/DLPH ADJ EVR
JOG
FSC

·SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	⇛	⇛
PB	⇨	⇨	⇨

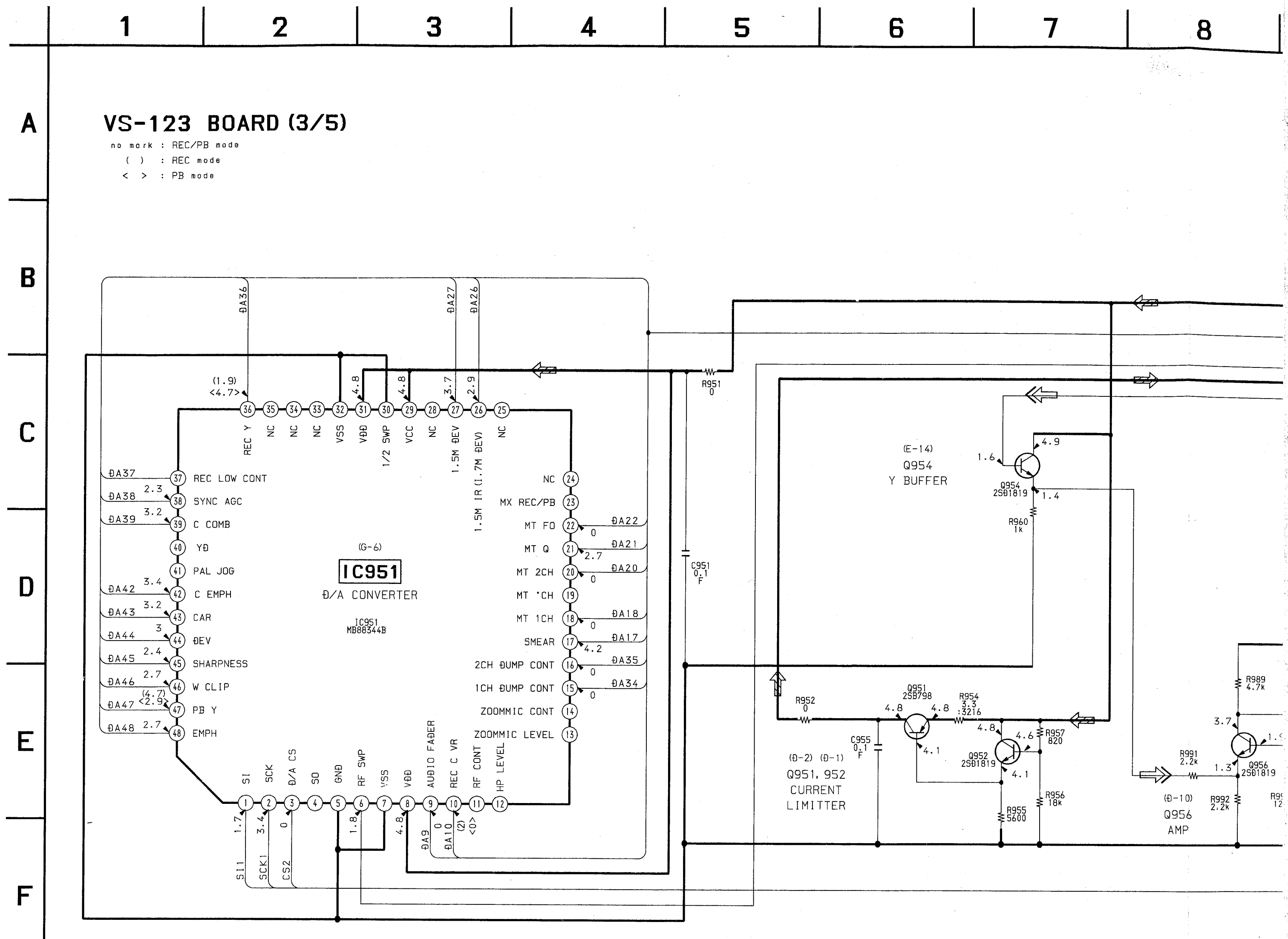
VS-123BOARD (2/5)



VS-123 (ELECTRIC VOLUME) SCHEMATIC DIAGRAM

— Ref. No. VS-123 BOARD: 10,000 series —

- Refer to page 4–22 for Printed Wiring Board.


1 2 3 4 5 6 7 8
A B C D E F G
VS-123 BOARD (3/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
IC951
(G-6)
Đ/A CONVERTER
IC951 MB88344B
① SI ② SCK ③ Đ/A CS ④ SO ⑤ GND ⑥ RF SWP ⑦ VSS ⑧ VĐĐ ⑨ AUDIO FAĐER ⑩ REC C VR ⑪ RF CONT ⑫ HP LEVEL
⑬ ZOOMMIC LEVEL ⑭ ZOOMMIC CONT ⑮ 1CH ĐUMP CONT ⑯ 2CH ĐUMP CONT ⑰ SMEAR ⑱ MT 1CH ⑲ MT 'CH ⑳ MT 2CH ㉑ MT Q ㉒ MT FO ㉓ MX REC/PB ㉔ NC
㉕ NC ㉖ 1.5M IR (1.7M ĐEV) ㉗ 1.5M ĐEV ㉘ NC ㉙ VCC ㉚ 1/2 SWP ㉛ VĐĐ ㉜ VSS ㉝ NC ㉞ NC ㉟ NC ㊱ REC Y
㊲ REC LOW CONT ㊳ SYNC AGC ㊴ C COMB ㊵ YĐ ㊶ PAL JOG ㊷ C EMPH ㊸ CAR ㊹ ĐEV ㊺ SHARPNESS ㊻ W CLIP ㊼ PB Y ㊽ EMPH
ĐA36 ĐA27 ĐA26 ĐA37 ĐA38 ĐA39 ĐA42 ĐA43 ĐA44 ĐA45 ĐA46 ĐA47 ĐA48
ĐA22 ĐA21 ĐA20 ĐA18 ĐA17 ĐA35 ĐA34 ĐA9 ĐA10
SI1 SCK1 CS2
(1.9) <4.7> 4.8 4.8 3.7 2.9 2.3 3.2 3.4 3.2 3 2.4 2.7 (4.7) <2.9> 2.7
0 2.7 0 0 4.2 0 0 1.7 3.4 0 1.8 4.8 0 (2) <0>
R951 0
C951 0.1 F
(E-14) Q954 Y BUFFER
Q954 2SĐ1819 1.6 4.9 1.4
R960 1k
R952 0
Q951 2SB798 4.8 4.8 4.1
R954 3.3 :3216
Q952 2SĐ1819 4.8 4.6 4.1
R957 820
C955 0.1 F
R956 18k
R955 5600
(Đ-2) (Đ-1) Q951, 952 CURRENT LIMITTER
R989 4.7k
R991 2.2k
R992 2.2k
Q956 2SĐ1819 3.7 1.3
(Đ-10) Q956 AMP
09

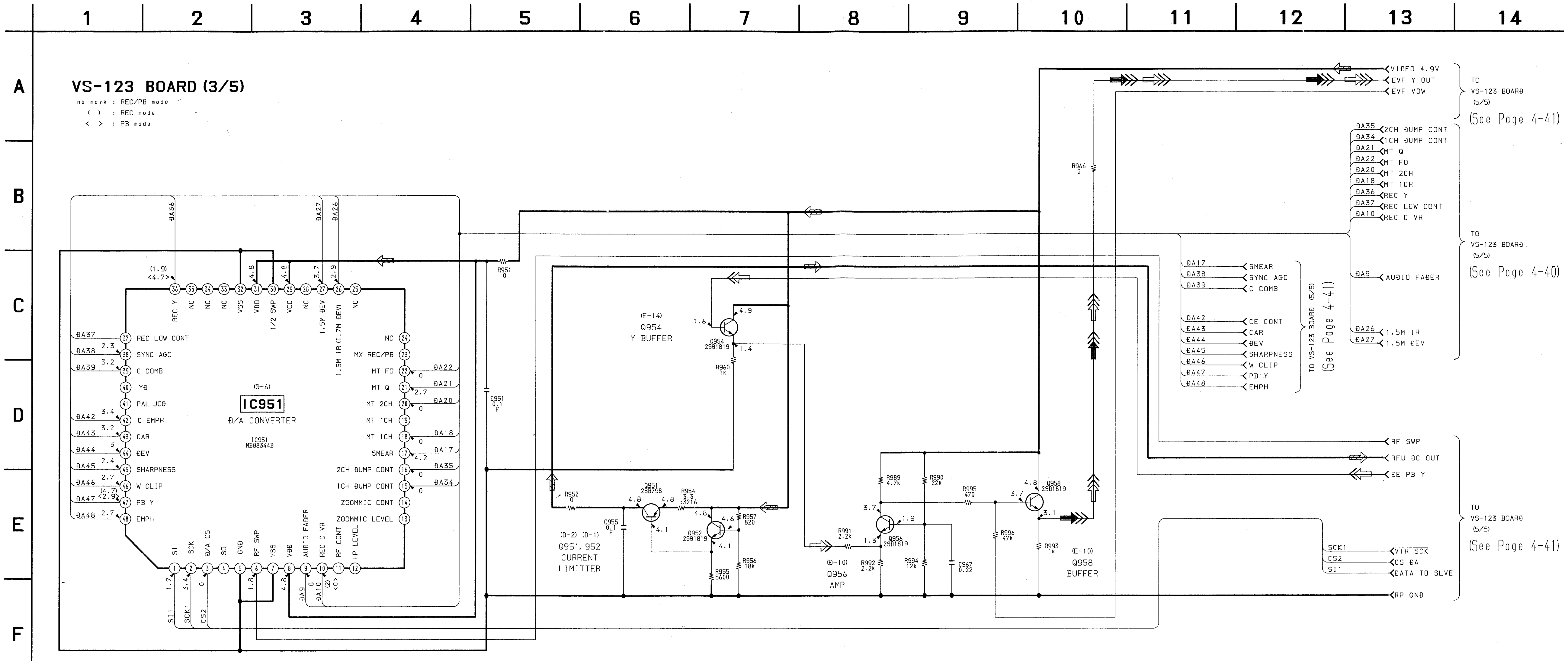
·SIGNAL PATH

	VIĐEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		➡»
PB	⇨	⇨»	⇨»

VS-123 (ELECTRIC VOLUME) SCHEMATIC DIAGRAM

— Ref. No. VS-123 BOARD: 10,000 series —

- Refer to page 4–22 for Printed Wiring Board.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
F
G
VS-123 BOARD (3/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
IC951
D/A CONVERTER
IC951 M5883448
(G-6)
REC LOW CONT
SYNC AGC
C COMB
YD
PAL JOG
C EMPH
CAR
DEV
SHARPNESS
W CLIP
PB Y
EMPH
NC
MX REC/PB
MT FO
MT Q
MT 2CH
MT 1CH
SMEAR
2CH DUMP CONT
1CH DUMP CONT
ZOOMMIC CONT
ZOOMMIC LEVEL
REC Y
VSS
VDD
1/2 SWP
VCC
1.5M DEV
1.5M IR (1.7M DEV)
SI
SCK
D/A CS
SO
GND
RF SWP
AUDIO FADER
REC C VR
RF CONT
HP LEVEL
SI1
SCK1
CS2
DA9
DA10
Q954
Y BUFFER
(E-14)
Q954 2SD1819
R960 1k
R951 0
C951 0.1 F
Q951, 952
CURRENT LIMITTER
(D-2) (D-1)
Q951 2SB798
Q952 2SD1819
R952 0
R954 3.3 :3216
R955 5600
R956 18k
R957 820
C955 0.1 F
Q956
AMP
(D-10)
Q956 2SD1819
R989 4.7k
R990 22k
R991 2.2k
R992 2.2k
R994 12k
R995 470
R996 47k
C967 0.22
Q958
BUFFER
(E-10)
Q958 2SD1819
R993 1k
R966 0
VIDEO 4.9V
EVF Y OUT
EVF VDW
TO VS-123 BOARD (5/5) (See Page 4-41)
2CH DUMP CONT
1CH DUMP CONT
MT Q
MT FO
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR
TO VS-123 BOARD (5/5) (See Page 4-40)
AUDIO FADER
1.5M IR
1.5M DEV
SMEAR
SYNC AGC
C COMB
CE CONT
CAR
DEV
SHARPNESS
W CLIP
PB Y
EMPH
TO VS-123 BOARD (5/5) (See Page 4-41)
RF SWP
RFU DC OUT
EE PB Y
VTR SCK
CS DA
DATA TO SLVE
RP GND
TO VS-123 BOARD (5/5) (See Page 4-41)

•SIGNAL PATH

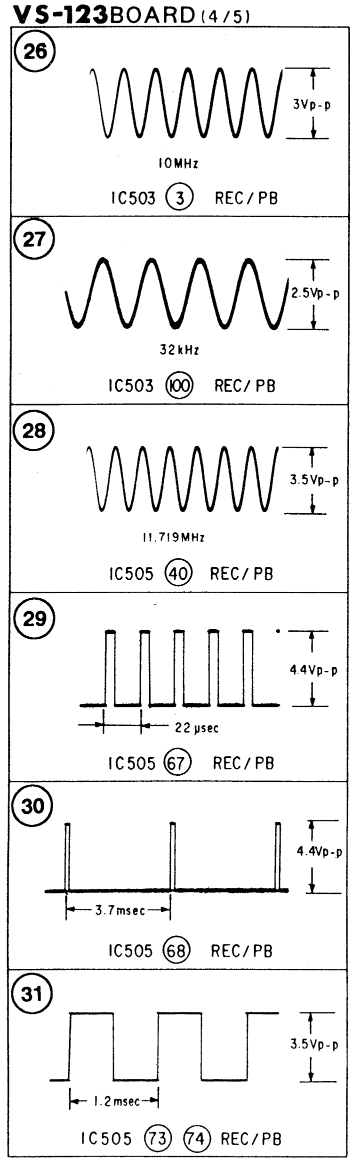
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		⮆
PB	⇨	⇨	⇨

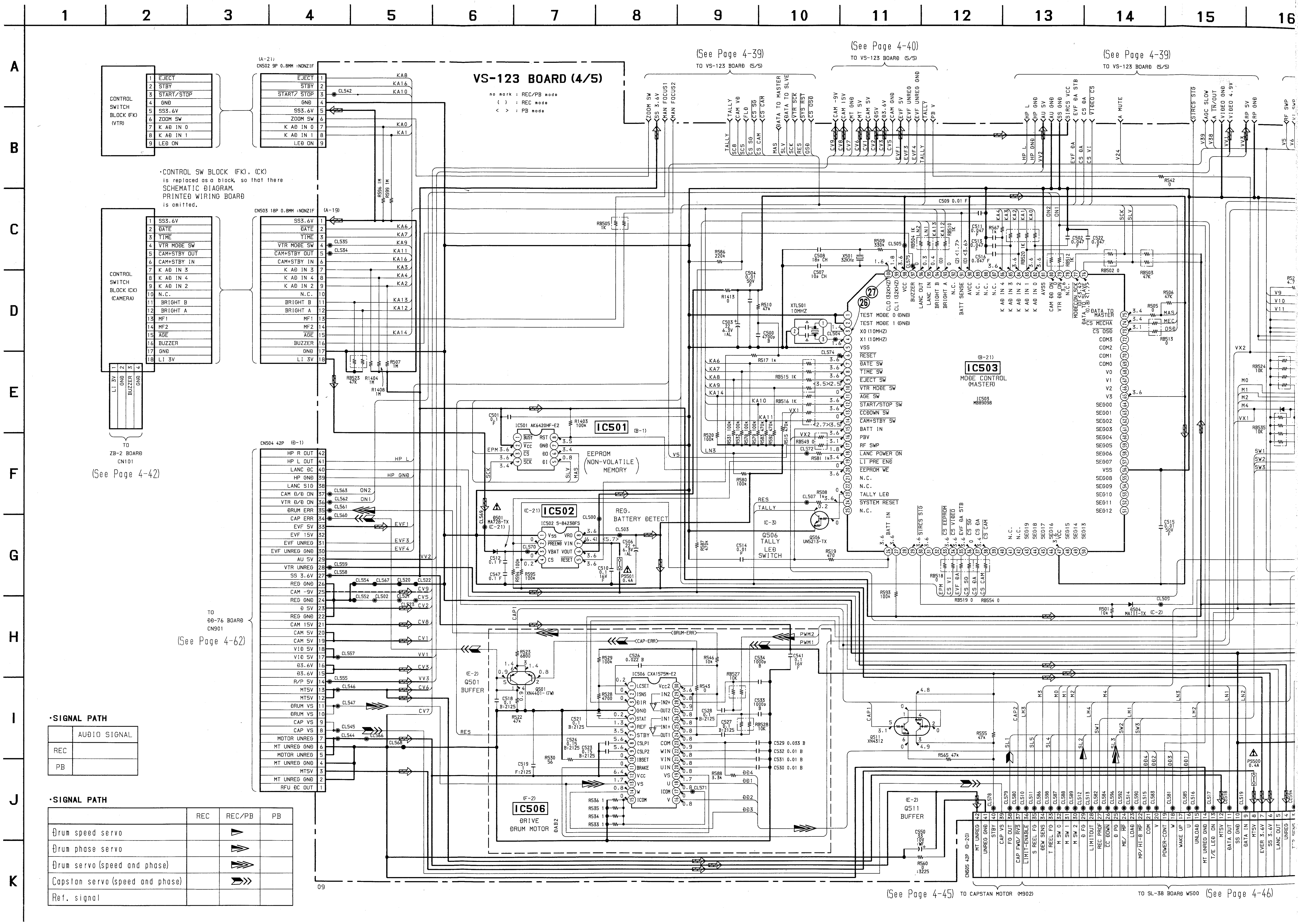
09

VS-123 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAM

— Ref. No. VS-123 BOARD: 10,000 series —

• Refer to page 4-22 for Printed Wiring Board.

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A
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C
D
E
F
G
H
I
J
K
VS-123 BOARD (4/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CONTROL SWITCH BLOCK (FK) (VTR)
CONTROL SWITCH BLOCK (CK) (CAMERA)
·CONTROL SW BLOCK (FK), (CK) is replaced as a block, so that there SCHEMATIC DIAGRAM, PRINTED WIRING BOARD is omitted.
(A-21) CN502 9P 0.8MM :NONZIF
CN503 18P 0.8MM :NONZIF (A-19)
CN504 42P (B-1)
TO ZB-2 BOARD CN101
(See Page 4-42)
TO DD-76 BOARD CN901
(See Page 4-62)
(See Page 4-39) TO VS-123 BOARD (5/5)
(See Page 4-40) TO VS-123 BOARD (5/5)
(See Page 4-39) TO VS-123 BOARD (5/5)
EJECT
STBY
START/STOP
GND
SS3.6V
ZOOM SW
KAD IN 0
KAD IN 1
LED ON
DATE
TIME
VTR MODE SW
CAM+STBY OUT
CAM+STBY IN
BRIGHT B
BRIGHT A
BUZZER
LI 3V
IC501 AK6420HF-E2
EEPROM (NON-VOLATILE MEMORY)
IC502 S-84230FS
REG. BATTERY DETECT
IC503 MB89098
MODE CONTROL (MASTER)
X501 32KHz
XTL501 10MHZ
Q506 UN5213-TX TALLY LED SWITCH
D501 MA728-TX
IC506 CXA1575M-E2
DRIVE DRUM MOTOR
Q501 XN4401 BUFFER
Q511 XN4312 BUFFER
CN505 42P (D-20)
(See Page 4-45) TO CAPSTAN MOTOR (M902)
TO SL-38 BOARD W500 (See Page 4-46)
PS501 0.4A
PS500 0.4A

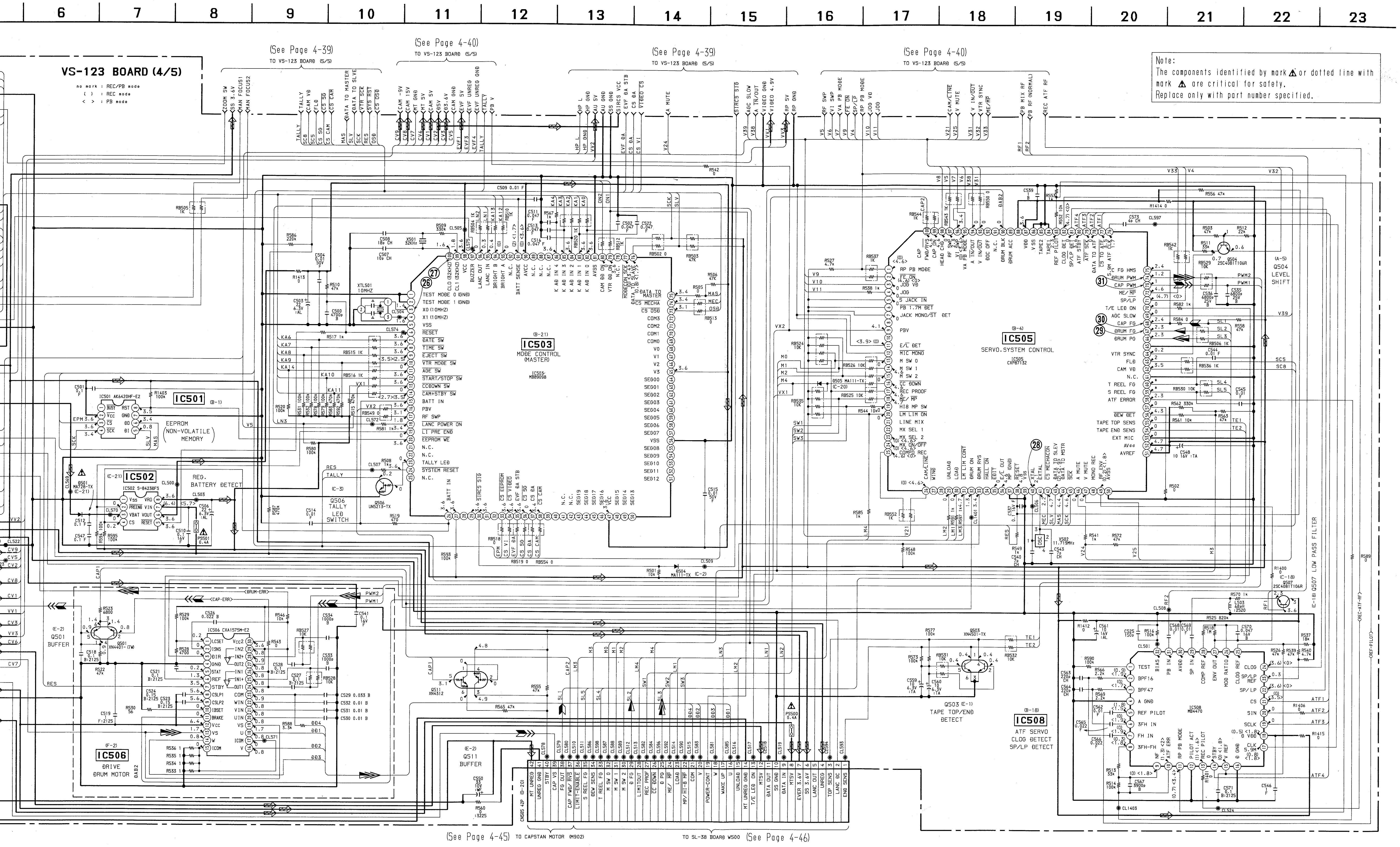
·SIGNAL PATH

	AUDIO SIGNAL
REC	
PB	

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	
Capstan servo (speed and phase)		➤➤	
Ref. signal			

- Refer to page 4-22 for Printed Wiring Board.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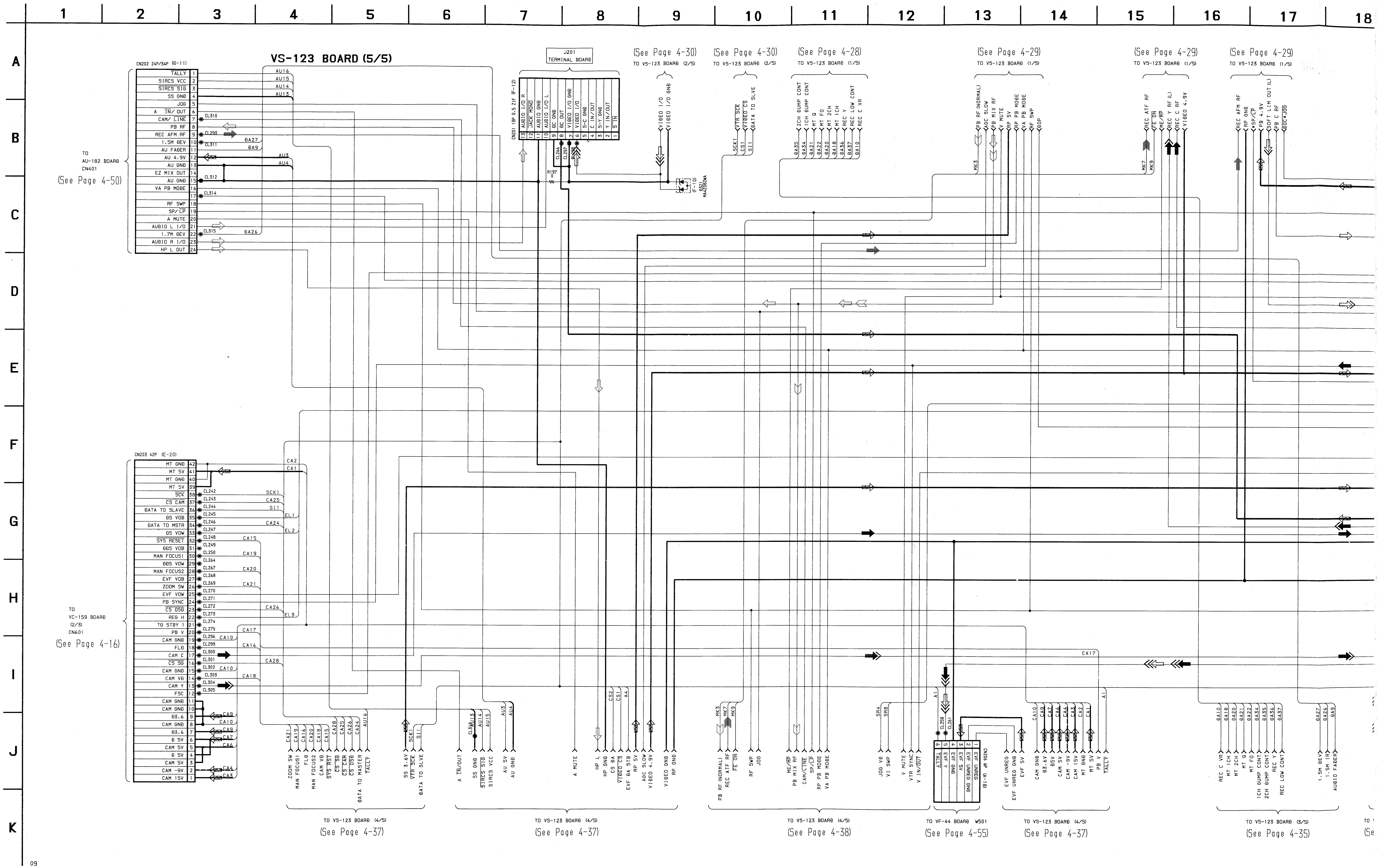
21
22
23
VS-123 BOARD (4/5)
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
(See Page 4-39) TO VS-123 BOARD (5/5)
(See Page 4-40) TO VS-123 BOARD (5/5)
(See Page 4-39) TO VS-123 BOARD (5/5)
(See Page 4-40) TO VS-123 BOARD (5/5)
IC503 MODE CONTROL (MASTER)
IC505 SERVO, SYSTEM CONTROL
IC501 EEPROM (NON-VOLATILE MEMORY)
IC502 REG. BATTERY DETECT
Q506 TALLY LED SWITCH
IC506 DRIVE DRUM MOTOR
Q501 BUFFER
Q511 BUFFER
Q503 TAPE TOP/END DETECT
IC508 ATF SERVO CLOG DETECT SP/LP DETECT
Q504 LEVEL SHIFT
Q507 LOW PASS FILTER
CN505 42P TO CAPSTAN MOTOR (M902)
TO SL-38 BOARD W500
(See Page 4-45)
(See Page 4-46)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

VS-123 (SIGNAL I/O) SCHEMATIC DIAGRAM

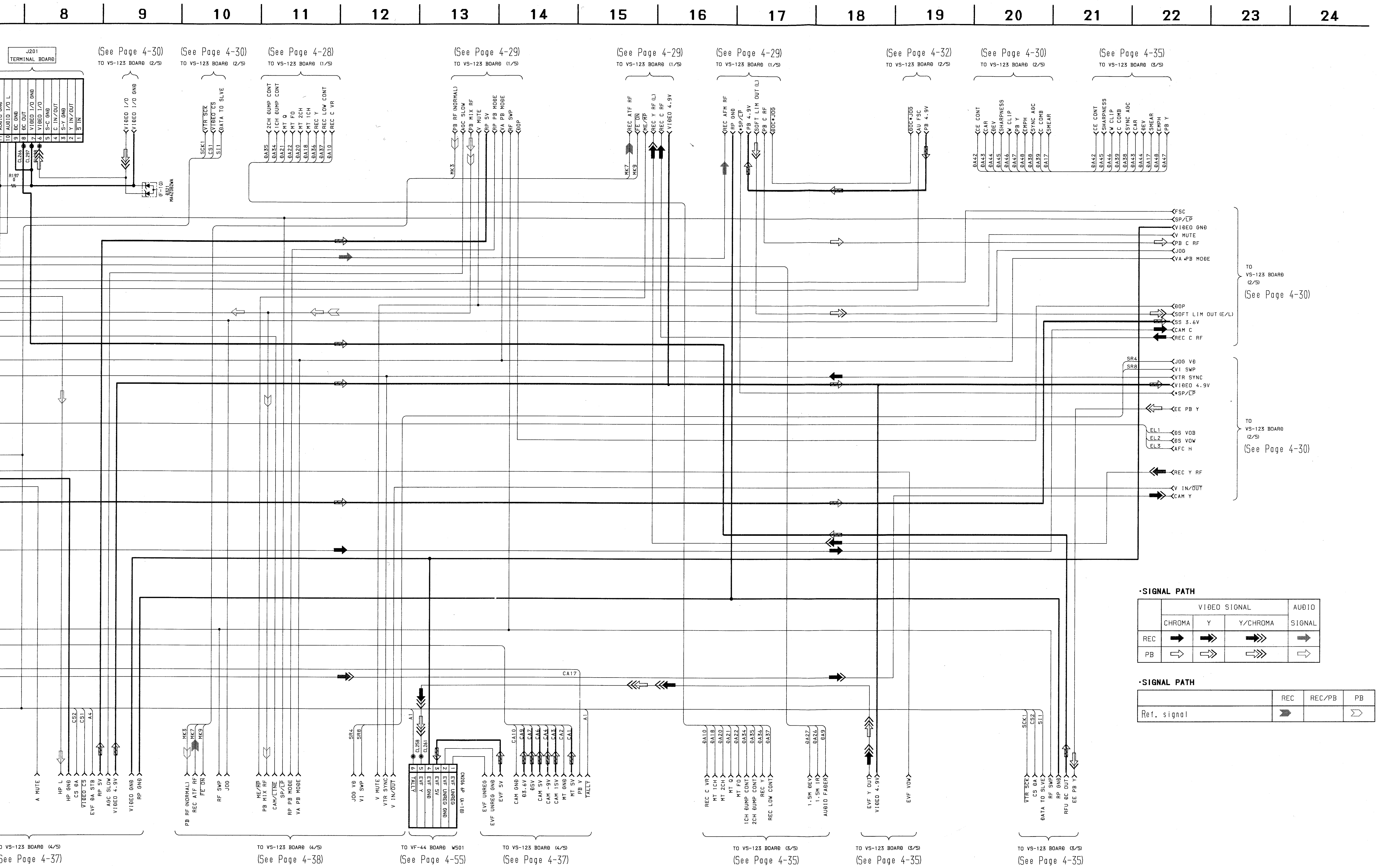
— Ref. No. VS-123 BOARD: 10,000 series —

- Refer to page 4–22 for Printed Wiring Board.



VS-123 BOARD (5/5)
CN202 24P/34P (G-11)
TALLY
SIRCS VCC
SIRCS SIG
SS GND
JOG
A IN/OUT
CAM/LINE
PB RF
REC AFM RF
1.5M BEV
AU FADER
AU 4.9V
AU GND
EZ MIX OUT
AU GND
VA PB MODE
RF SWP
SP/LP
A MUTE
AUDIO L I/O
1.7M BEV
AUDIO R I/O
HP L OUT
TO AU-182 BOARD CN401
(See Page 4-50)
J201 TERMINAL BOARD
CN201 13P 0.5 ZIF (F-12)
AUDIO I/O R
JACK MONO
AUDIO GND
AUDIO I/O L
DC GND
DC OUT
VIDEO I/O GND
VIDEO I/O
S-C GND
C IN/OUT
S-Y GND
Y IN/OUT
S IN
R197
(See Page 4-30) TO VS-123 BOARD (2/5)
VIDEO I/O
VIDEO I/O GND
D231 MA4082WA
(See Page 4-30) TO VS-123 BOARD (2/5)
VTR SCK
VIDEO CS
DATA TO SLVE
(See Page 4-28) TO VS-123 BOARD (1/5)
2CH BUMP CONT
1CH BUMP CONT
MT Q
MT FO
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR
(See Page 4-29) TO VS-123 BOARD (1/5)
PB RF (NORMAL)
AGC SLOW
PB MIX RF
V MUTE
RP 5V
RP PB MODE
VA PB MODE
RF SWP
DDP
(See Page 4-29) TO VS-123 BOARD (1/5)
REC ATF RF
FE ON
ME/MP
REC Y RF (L)
REC C RF
VIDEO 4.9V
(See Page 4-29) TO VS-123 BOARD (1/5)
REC AFM RF
RP GND
SP/LP
PB 4.9V
SOFT LIM OUT (L)
PB C RF
DDC*JOG
CN203 42P (E-20)
MT GND
MT 5V
MT GND
MT 5V
SCK
CS CAM
DATA TO SLAVE
DS VDD
DATA TO MSTR
DS VDW
SYS RESET
DDS VDD
MAN FOCUS1
DDS VDW
MAN FOCUS2
EVF VDD
ZOOM SW
EVF VDW
PB SYNC
CS DSD
REG H
TG STBY 1
PB V
CAM GND
FLD
CAM C
CS SG
CAM GND
CAM VD
CAM Y
FSC
CAM GND
CAM GND
D5.6
CAM GND
D3.6
D 5V
CAM 5V
D 5V
CAM 5V
CAM -9V
CAM 15V
TO VC-159 BOARD (2/3) CN601
(See Page 4-16)
ZOOM SW
MAN FOCUS1
FLD
MAN FOCUS2
CAM VD
SYS RST
CS SG
CS CAM
CS DSD
DATA TO MASTER
TALLY
TO VS-123 BOARD (4/5)
(See Page 4-37)
SS 3.6V
VTR SCK
DATA TO SLVE
A IN/OUT
SS GND
SIRCS SIG
SIRCS VCC
AU 5V
AU GND
A MUTE
HP L
HP GND
CS DA
VIDEO CS
EVF DA STB
RP 5V
AGC SLOW
VIDEO 4.9V
VIDEO GND
RP GND
TO VS-123 BOARD (4/5)
(See Page 4-37)
PB RF (NORMAL)
REC ATF RF
FE ON
RF SWP
JOG
ME/MP
PB MIX RF
CAM/LINE
SP/LP
RP PB MODE
VA PB MODE
JOG VD
VI SWP
V MUTE
VTR SYNC
V IN/OUT
TO VS-123 BOARD (4/5)
(See Page 4-38)
CN206 6P (D-18)
TALLY
EVF Y
EVF GND
EVF 5V
EVF UNREG GND
EVF UNREG
TO VF-44 BOARD W501
(See Page 4-55)
EVF UNREG
EVF UNREG GND
EVF 5V
CAM GND
D3.6V
D5V
CAM 5V
CAM -9V
CAM 15V
MT UNREG
MT 5V
PB V
TALLY
TO VS-123 BOARD (4/5)
(See Page 4-37)
REC C VR
MT 1CH
MT 2CH
MT FO
MT Q
1CH BUMP CONT
2CH BUMP CONT
REC Y
REC LOW CONT
TO VS-123 BOARD (3/5)
(See Page 4-35)
1.5M BEV
1.5M IR
AUDIO FADER

Wiring Board.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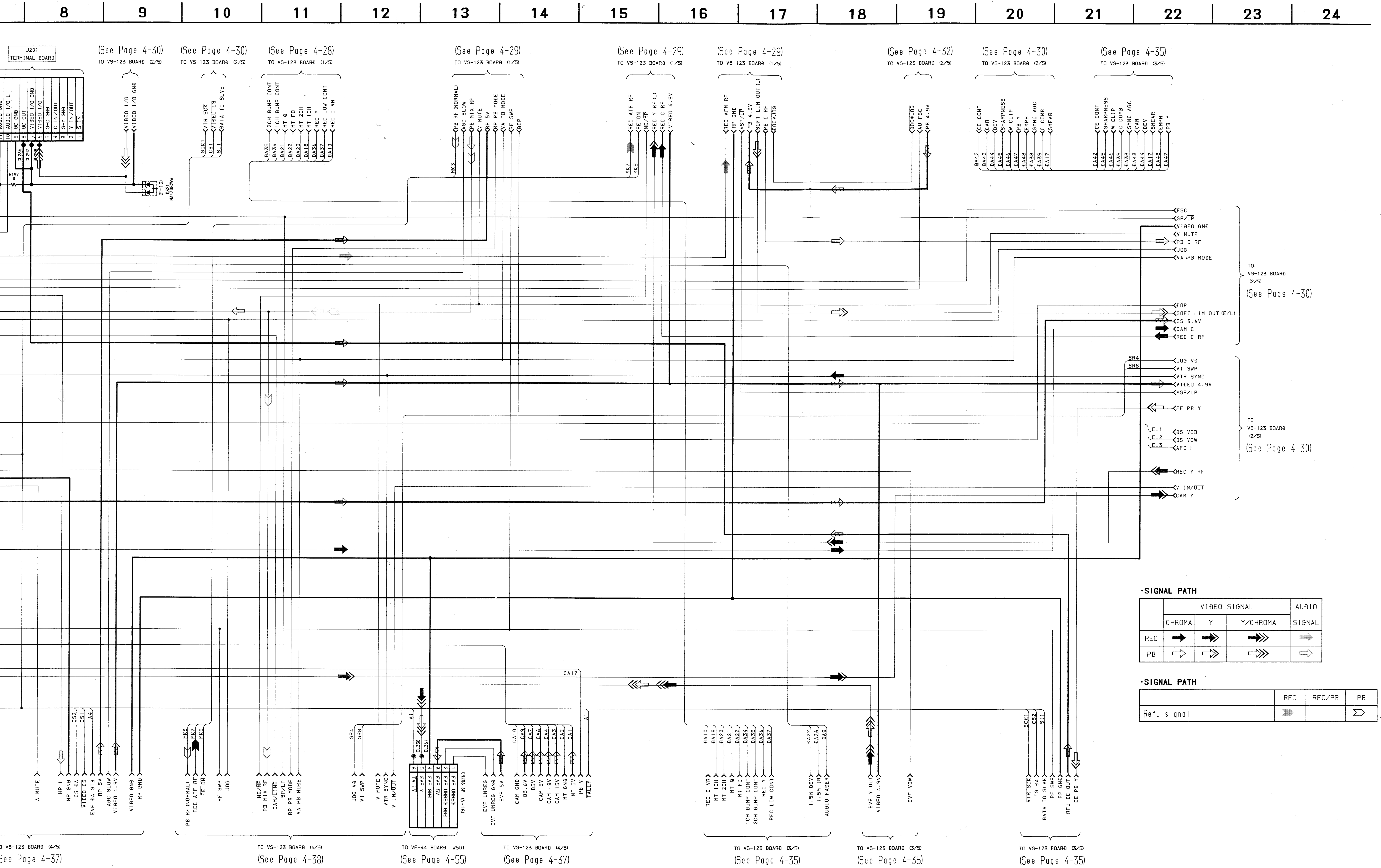
23
24
J201
TERMINAL BOARD
(See Page 4-30)
TO VS-123 BOARD (2/5)
(See Page 4-30)
TO VS-123 BOARD (2/5)
(See Page 4-28)
TO VS-123 BOARD (1/5)
(See Page 4-29)
TO VS-123 BOARD (1/5)
(See Page 4-29)
TO VS-123 BOARD (1/5)
(See Page 4-29)
TO VS-123 BOARD (1/5)
(See Page 4-32)
TO VS-123 BOARD (2/5)
(See Page 4-30)
TO VS-123 BOARD (2/5)
(See Page 4-35)
TO VS-123 BOARD (3/5)
VIDEO I/O
VIDEO I/O GND
VTR SCK
VIDEO CS
DATA TO SLVE
2CH BUMP CONT
1CH BUMP CONT
MT Q
MT FO
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR
PB RF (NORMAL)
AGC SLOW
PB MIX RF
V MUTE
RP 5V
VA PB MODE
RF SWP
DOP
REC ATF RF
FE ON
ME/MP
REC Y RF (L)
REC C RF
VIDEO 4.9V
REC AFM RF
RP GND
SP/LP
PB 4.9V
SOFT LIM OUT (L)
PB C RF
DOC JOG
DOC JOG
4U FSC
PB 4.9V
CE CONT
CAR
DEV
SHARPNESS
W CLIP
PB Y
EMPH
SYNC AGC
C COMB
SHEAR
CE CONT
SHARPNESS
W CLIP
C COMB
SYNC AGC
CAR
DEV
SHEAR
EMPH
PB Y
SCK1
CS1
SI1
MK3
MK7
MK9
R197
D201
MA4062WA
FSC
SP/LP
VIDEO GND
V MUTE
PB C RF
JOG
VA PB MODE
TO
VS-123 BOARD
(2/5)
(See Page 4-30)
DOP
SOFT LIM OUT (E/L)
SS 3.6V
CAM C
REC C RF
SR4
SR8
JOG VD
VI SWP
VTR SYNC
VIDEO 4.9V
SP/LP
EE PB Y
EL1
EL2
EL3
DS VDD
DS VDW
AFC H
TO
VS-123 BOARD
(2/5)
(See Page 4-30)
REC Y RF
V IN/OUT
CAM Y
CA17
A MUTE
HP L
HP GND
CS DA
VIDEO CS
EVF DA STB
RP 5V
AGC SLOW
VIDEO 4.9V
VIDEO GND
RP GND
PB RF (NORMAL)
REC ATF RF
FE ON
RF SWP
JOG
ME/MP
PB MIX RF
CAM/LINE
SP/LP
RP PB MODE
VA PB MODE
JOG VD
VI SWP
V MUTE
VTR SYNC
V IN/OUT
EVF Y
EVF GND
EVF 5V
EVF UNREG
EVF UNREG GND
TALLY
CN206 6P
EVF UNREG
EVF UNREG GND
EVF 5V
CAM GND
D3.6V
D5V
CAM 5V
CAM -9V
CAM 15V
MT GND
MT 5V
PB Y
TALLY
REC C VR
MT 1CH
MT 2CH
MT Q
MT FO
1CH BUMP CONT
2CH BUMP CONT
REC Y
REC LOW CONT
1.5M DEV
1.5M (R)
AUDIO FADER
EVF Y OUT
VIDEO 4.9V
EVF VDW
VTR SCK
CS DA
DATA TO SLVE
RF SWP
RP GND
RFU DC OUT
EE PB Y
TO VS-123 BOARD (4/5)
(See Page 4-37)
TO VS-123 BOARD (4/5)
(See Page 4-38)
TO VF-44 BOARD W501
(See Page 4-55)
TO VS-123 BOARD (4/5)
(See Page 4-37)
TO VS-123 BOARD (3/5)
(See Page 4-35)
TO VS-123 BOARD (3/5)
(See Page 4-35)
TO VS-123 BOARD (3/5)
(See Page 4-35)

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➡		⇨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23
24
J201
TERMINAL BOARD
AUDIO I/O L
DC GND
DC OUT
VIDEO I/O GND
VIDEO I/O
S-C GND
C IN/OUT
S-Y GND
Y IN/OUT
S IN
CL266
CL297
CL298
R197
0
D321
MA4Z082WA
(F-10)
(See Page 4-30)
TO VS-123 BOARD (2/5)
VIDEO I/O
VIDEO I/O GND
(See Page 4-30)
TO VS-123 BOARD (2/5)
VTR SCK
VIDEO CS
DATA TO SLVE
SCK1
CS1
SI1
(See Page 4-28)
TO VS-123 BOARD (1/5)
2CH DUMP CONT
1CH DUMP CONT
MT Q
MT FO
MT 2CH
MT 1CH
REC Y
REC LOW CONT
REC C VR
DA35
DA34
DA21
DA22
DA20
DA18
DA36
DA37
DA10
(See Page 4-29)
TO VS-123 BOARD (1/5)
PB RF (NORMAL)
AGC SLOW
PB MIX RF
V MUTE
RP 5V
RP PB MODE
VA PB MODE
RF SWP
DOP
MK3
(See Page 4-29)
TO VS-123 BOARD (1/5)
REC ATF RF
FE ON
ME/MP
REC Y RF (L)
REC C RF
VIDEO 4.9V
MK7
MK9
(See Page 4-29)
TO VS-123 BOARD (1/5)
REC AFM RF
RP GND
*SP/LP
PB 4.9V
SOFT LIM OUT (L)
PB C RF
DOC*JOG
(See Page 4-32)
TO VS-123 BOARD (2/5)
DOC*JOG
AU FSC
PB 4.9V
(See Page 4-30)
TO VS-123 BOARD (2/5)
CE CONT
CAR
DEV
SHARPNESS
W CLIP
PB Y
EMPH
SYNC AGC
C COMB
SMEAR
DA42
DA43
DA44
DA45
DA46
DA47
DA48
DA38
DA39
DA17
(See Page 4-35)
TO VS-123 BOARD (3/5)
CE CONT
SHARPNESS
W CLIP
C COMB
SYNC AGC
CAR
DEV
SMEAR
EMPH
PB Y
DA42
DA45
DA46
DA39
DA38
DA43
DA44
DA17
DA48
DA47
FSC
SP/LP
VIDEO GND
V MUTE
PB C RF
JOG
VA •PB MODE
DOP
SOFT LIM OUT (E/L)
SS 3.6V
CAM C
REC C RF
TO
VS-123 BOARD
(2/5)
(See Page 4-30)
SR4
SR8
JOG VD
VI SWP
VTR SYNC
VIDEO 4.9V
*SP/LP
EE PB Y
EL1
EL2
EL3
DS VOB
DS VOW
AFC H
REC Y RF
V IN/OUT
CAM Y
TO
VS-123 BOARD
(2/5)
(See Page 4-30)
CA17
CS2
CS1
A4
A MUTE
HP L
HP GND
CS DA
VIDEO CS
EVF DA STB
RP 5V
AGC SLOW
VIDEO 4.9V
VIDEO GND
RP GND
O VS-123 BOARD (4/5)
See Page 4-37)
MK3
MK7
MK9
PB RF (NORMAL)
REC ATF RF
FE ON
RF SWP
JOG
ME/MP
PB MIX RF
CAM/LINE
SP/LP
RP PB MODE
VA PB MODE
TO VS-123 BOARD (4/5)
(See Page 4-38)
SR4
SR8
JOG VD
VI SWP
V MUTE
VTR SYNC
V IN/OUT
A1
CL258
CL261
CN206 6P (A-18)
1 EVF UNREG
2 EVF UNREG GND
3 EVF 5V
4 EVF GND
5 EVF Y
6 TALLY
TO VF-44 BOARD W501
(See Page 4-55)
EVF UNREG
EVF UNREG GND
EVF 5V
CA10
CA9
CA7
CA6
CA4
CA3
CA2
CA1
A1
CAM GND
D3.6V
D5V
CAM 5V
CAM -9V
CAM 15V
MT GND
MT 5V
PB V
TALLY
TO VS-123 BOARD (4/5)
(See Page 4-37)
DA10
DA18
DA20
DA21
DA22
DA34
DA35
DA36
DA37
REC C VR
MT 1CH
MT 2CH
MT Q
MT FO
1CH DUMP CONT
2CH DUMP CONT
REC Y
REC LOW CONT
DA27
DA26
DA9
1.5M DEV
1.5M IR
AUDIO FADER
TO VS-123 BOARD (3/5)
(See Page 4-35)
EVF Y OUT
VIDEO 4.9V
EVF VOW
TO VS-123 BOARD (3/5)
(See Page 4-35)
SCK1
CS2
SI1
VTR SCK
CS DA
DATA TO SLVE
RF SWP
RP GND
RFU DC OUT
EE PB Y
TO VS-123 BOARD (3/5)
(See Page 4-35)

·SIGNAL PATH

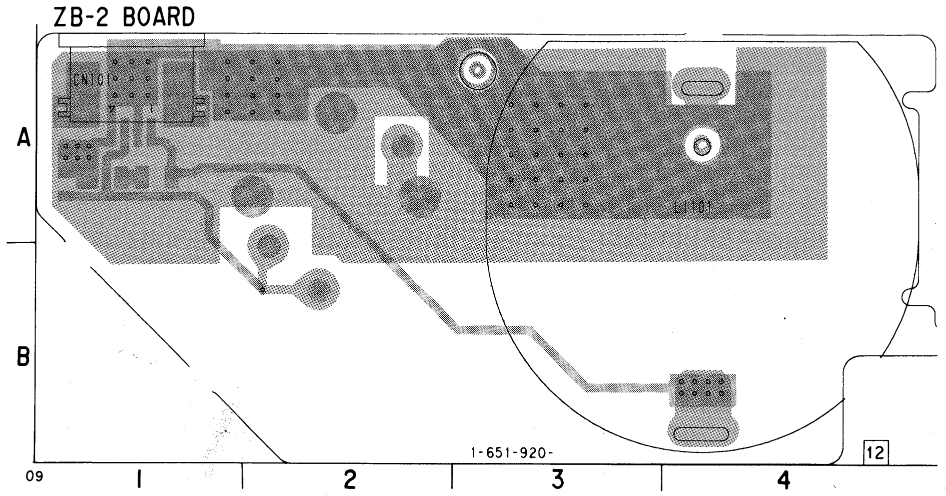
	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	SIGNAL
REC	➡	➡»	➡»	➡
PB	⇨	⇨»	⇨»	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➡		▷

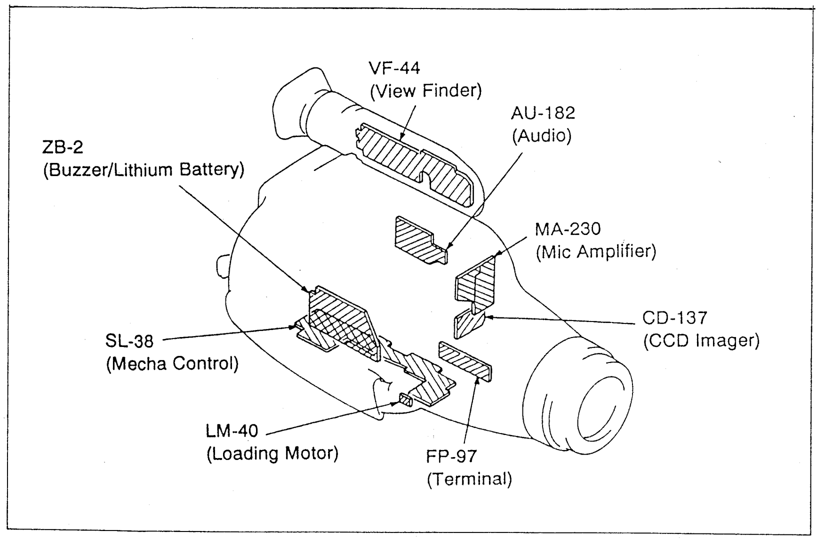
ZB-2 (BUZZER/LITHIUM BATTERY) PRINTED WIRING BOARD

— Ref. No. ZB-2 BOARD: 3,000 series —


ZB-2 BOARD
CN101
LI101
1-651-920-
12
A
B
09
1
2
3
4

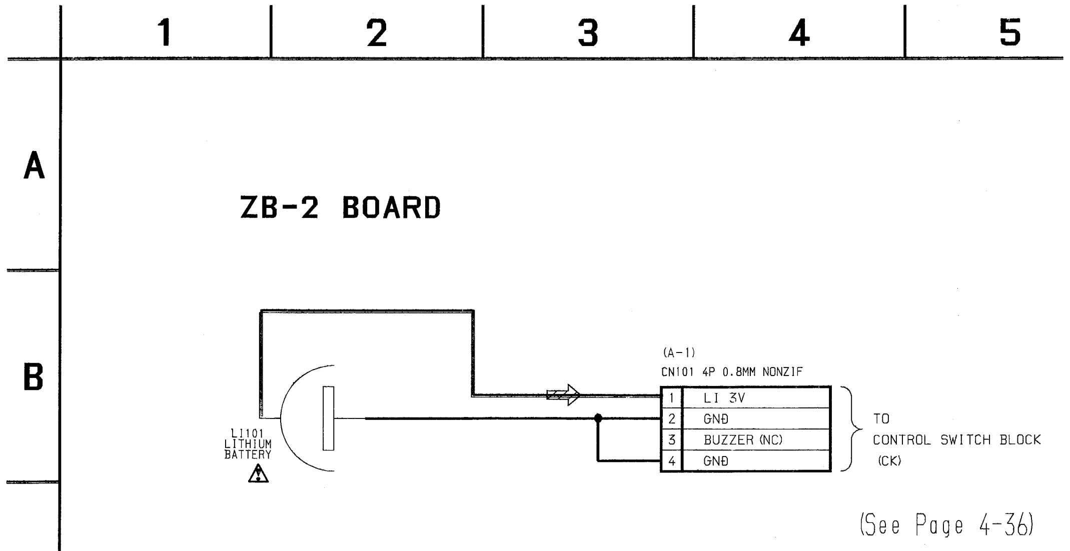
ZB-2 BOARD	
CN101	A-1
LI101	A-4

- **For printed wiring board of ZB-2 board.**
- ▨ : Pattern from the side which enable seeing.
- ▨ : Pattern of the rear side.


VF-44
(View Finder)
AU-182
(Audio)
ZB-2
(Buzzer/Lithium Battery)
MA-230
(Mic Amplifier)
CD-137
(CCD Imager)
SL-38
(Mecha Control)
LM-40
(Loading Motor)
FP-97
(Terminal)

ZB-2 (BUZZER/LITHIUM BATTERY) SCHEMATIC DIAGRAM

— Ref. No. ZB-2 BOARD: 3,000 series —


1
2
3
4
5
A
B
ZB-2 BOARD
LI101
LITHIUM
BATTERY
⚠
(A-1)
CN101 4P 0.8MM NONZIF
1 LI 3V
2 GND
3 BUZZER (NC)
4 GND
TO
CONTROL SWITCH BLOCK
(CK)

(See Page 4-36)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

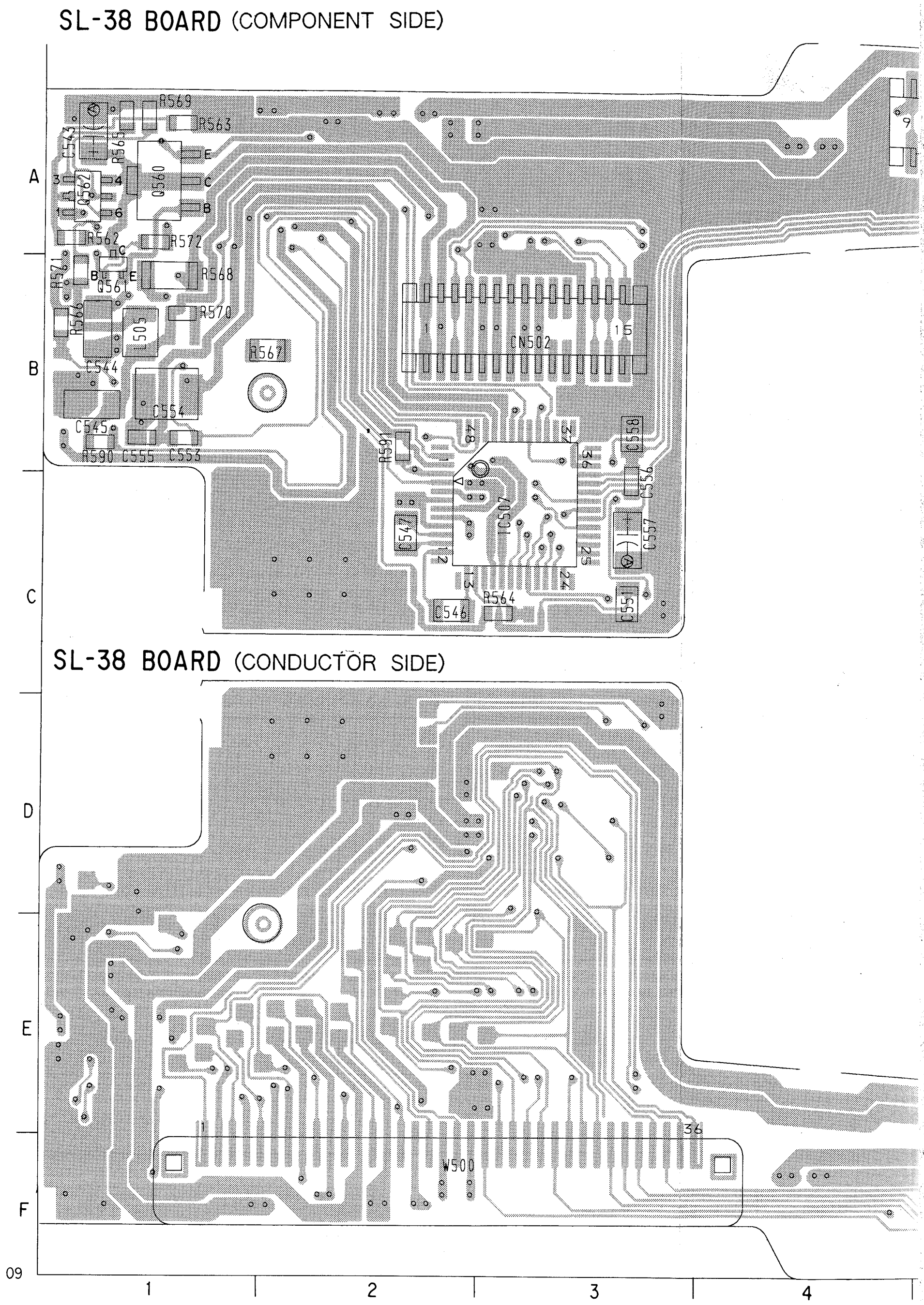
C
D
09

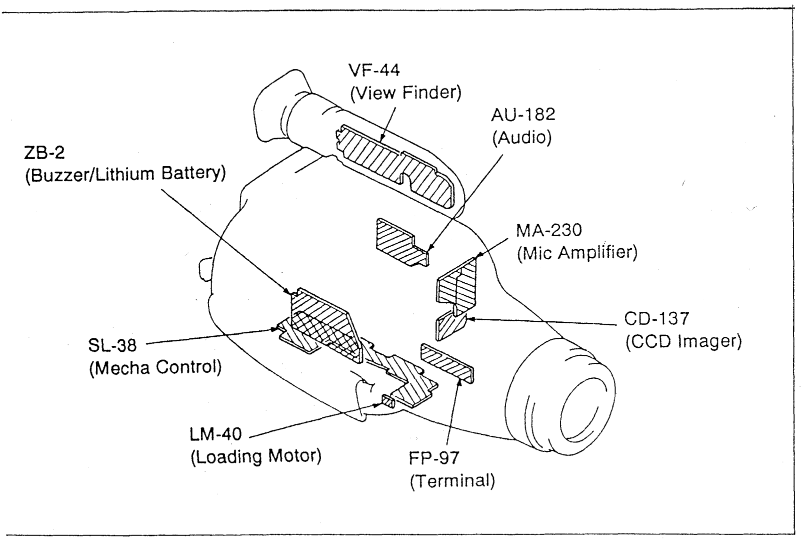
SL-38 (MECHA CONTROL) PRINTED WIRING BOARD

- Printe

— Ref. No. SL-38 BOARD: 3,000 series —

SL-38 BOARD	
C543	A-1
C544	B-1
C545	B-1
C546	C-2
C547	C-2
C551	C-3
C553	B-1
C554	B-1
C555	B-1
C556	C-3
C557	C-3
C558	B-3
CN500	A-7
CN501	A-5
CN502	B-3
IC507	C-3
L505	B-1
Q560	A-1
Q561	B-1
Q562	A-1
R562	A-1
R563	A-1
R564	C-3
R565	A-1
R566	B-1
R567	B-2
R568	B-1
R569	A-1
R570	B-1
R571	B-1
R572	A-1
R590	B-1
R591	B-2
W500	F-2
W501	D-9


SL-38 BOARD (COMPONENT SIDE)
R569
R563
C543
R565
Q560
Q562
R562
R572
R571
R566
Q561
R568
R570
L505
C544
R567
CN502
C554
C545
R590
C555
C553
R591
C558
C556
C547
IC507
C557
R564
C546
C551
SL-38 BOARD (CONDUCTOR SIDE)
W500
1
36
A
B
C
D
E
F
09
1
2
3
4

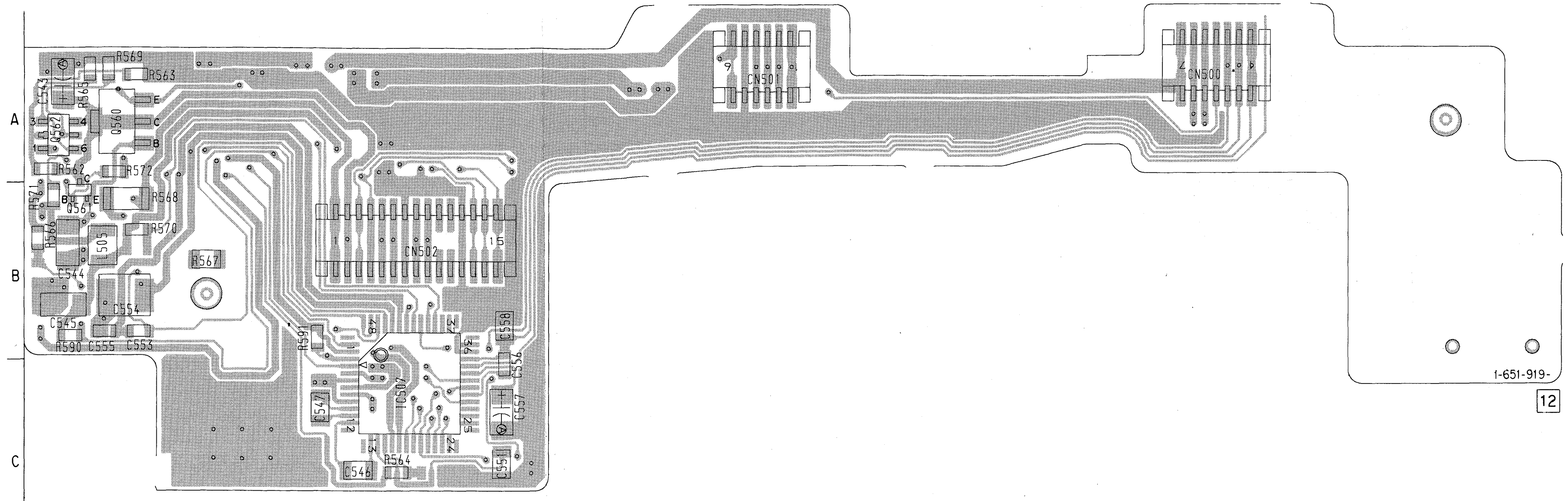

VF-44
(View Finder)
AU-182
(Audio)
ZB-2
(Buzzer/Lithium Battery)
MA-230
(Mic Amplifier)
CD-137
(CCD Imager)
SL-38
(Mecha Control)
LM-40
(Loading Motor)
FP-97
(Terminal)

SL-38 (MECHA CONTROL) PRINTED WIRING BOARD

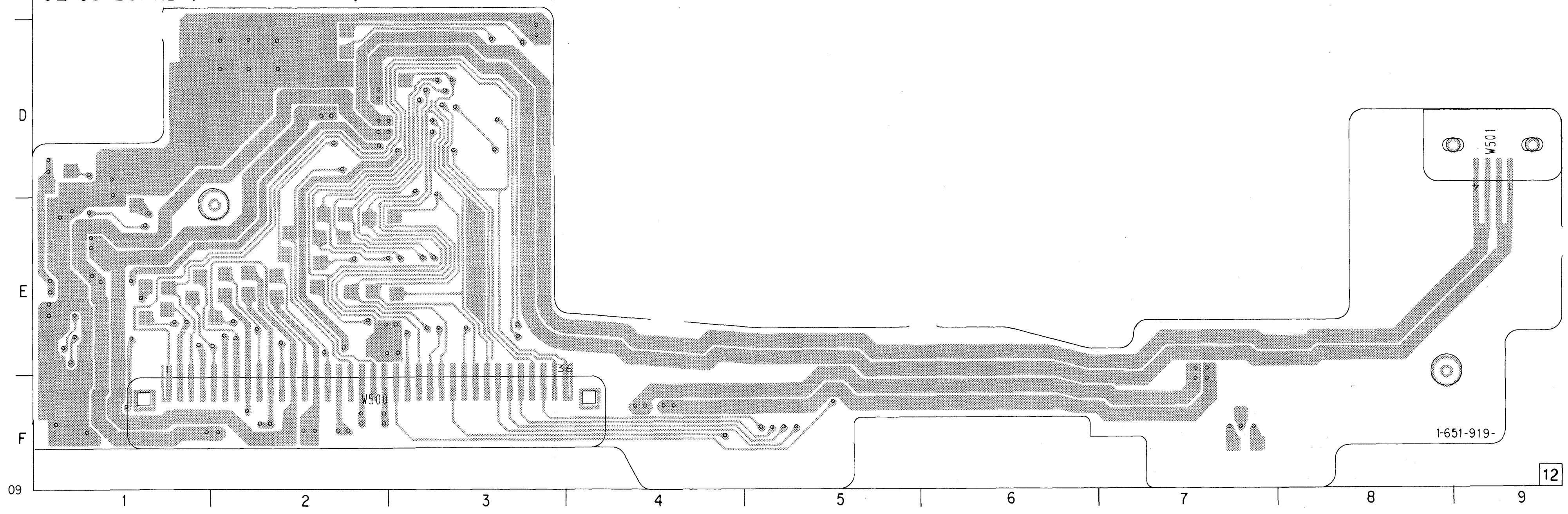
— Ref. No. SL-38 BOARD: 3,000 series —

- Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.

SL-38 BOARD (COMPONENT SIDE)


A
B
C
R569
R563
C543
Q560
Q562
R562
R572
Q561
R568
R570
L505
R567
C544
C554
C545
R590
C555
C553
CN501
CN500
CN502
R591
IC507
C558
C556
C547
C557
C546
R564
C551
1-651-919-
12

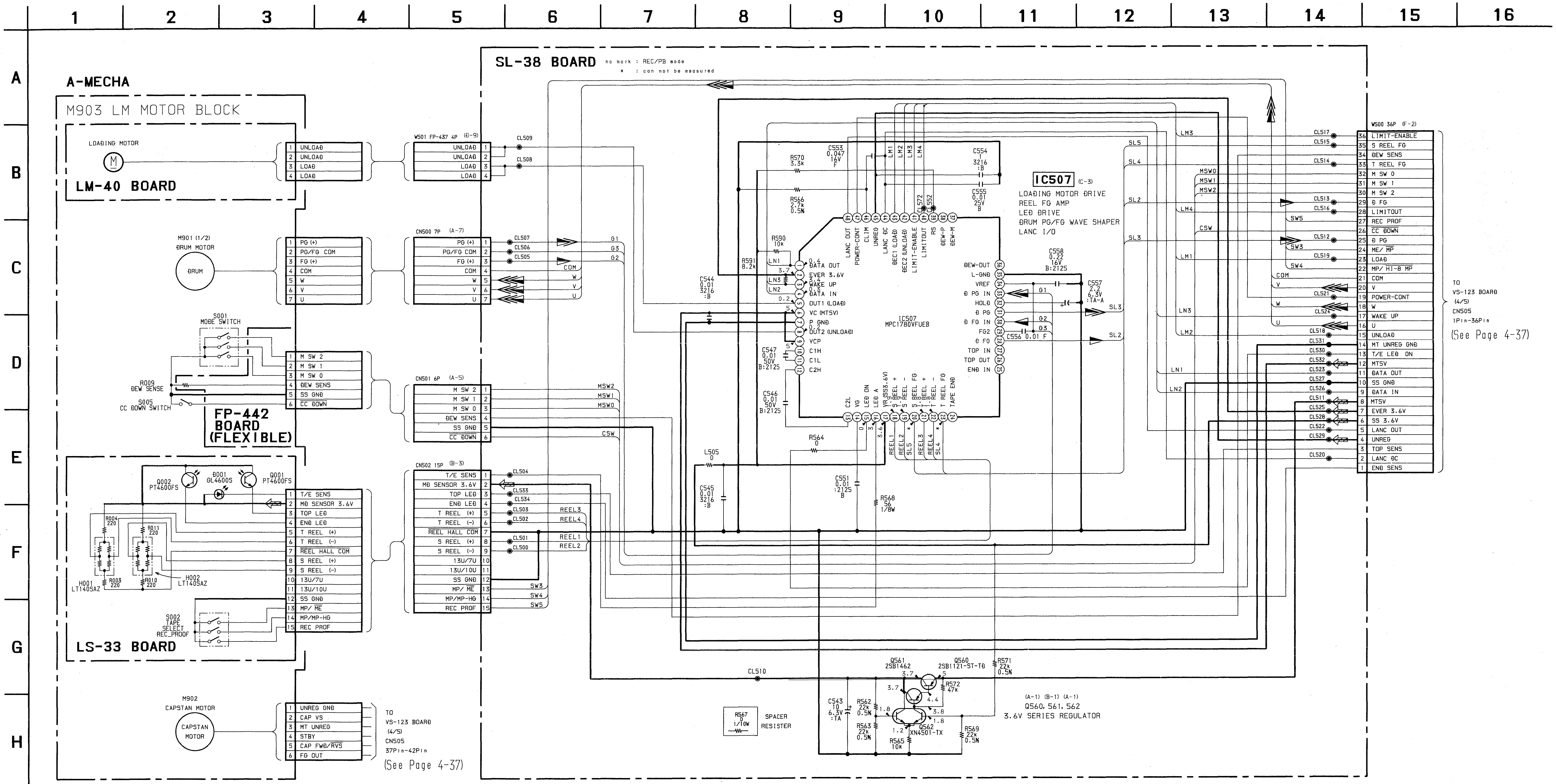
SL-38 BOARD (CONDUCTOR SIDE)


D
E
F
W500
W501
1-651-919-
12
09
1
2
3
4
5
6
7
8
9

SL-38 BOARD	
C543	A-1
C544	B-1
C545	B-1
C546	C-2
C547	C-2
C551	C-3
C553	B-1
C554	B-1
C555	B-1
C556	C-3
C557	C-3
C558	B-3
CN500	A-7
CN501	A-5
CN502	B-3
IC507	C-3
L505	B-1
Q560	A-1
Q561	B-1
Q562	A-1
R562	A-1
R563	A-1
R564	C-3
R565	A-1
R566	B-1
R567	B-2
R568	B-1
R569	A-1
R570	B-1
R571	B-1
R572	A-1
R590	B-1
R591	B-2
W500	F-2
W501	D-9

SL-38 (MECHA CONTROL), FP-442 (MODE SWITCH), LM-40 (LOADING MOTOR), LS-33 (TAPE SENSOR) SCHEMATIC DIAGRAMS

— Ref. No. SL-38 BOARD: 3,000 series, LS-33 BOARD: 6,000 series —


A-MECHA
M903 LM MOTOR BLOCK
LOADING MOTOR
LM-40 BOARD
M901 (1/2) DRUM MOTOR
S001 MODE SWITCH
R009 DEW SENSE
S005 CC DOWN SWITCH
FP-442 BOARD (FLEXIBLE)
Q002 PT4600FS
D001 GL4600S
Q001 PT4600FS
H001 LT1405AZ
H002 LT1405AZ
S002 TAPE SELECT REC_PROOF
LS-33 BOARD
M902 CAPSTAN MOTOR
TO VS-123 BOARD (4/5) CN505 37Pin-42Pin (See Page 4-37)
SL-38 BOARD
no mark : REC/PB mode
* : can not be measured
W501 FP-437 4P
CN500 7P
CN501 6P
CN502 15P
IC507
LOADING MOTOR DRIVE
REEL FG AMP
LED DRIVE
DRUM PG/FG WAVE SHAPER
LANC I/O
IC507 MPC1780VFUEB
Q561 2SB1462
Q560 2SB1121-ST-TD
Q562 XN4501-TX
(A-1) (B-1) (A-1)
Q560, 561, 562
3.6V SERIES REGULATOR
R567 0 1/10W SPACER RESISTER
W500 36P
TO VS-123 BOARD (4/5) CN505 1Pin-36Pin (See Page 4-37)

·Printed wiring boards of FP-442, LM-40 and LS-33 boards are omitted.

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		▷▷	
Drum servo (speed and phase)		▷▷▷	

09

AU-182 (AUDIO) PRINTED WIRING BOARD

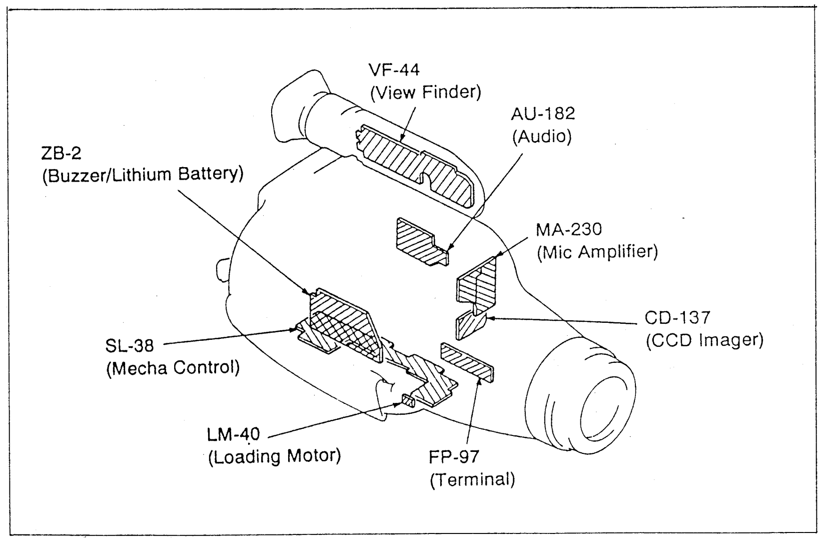
— Ref. No. AU-182 BOARD: 3,000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.

• ● : Through hole is omitted.

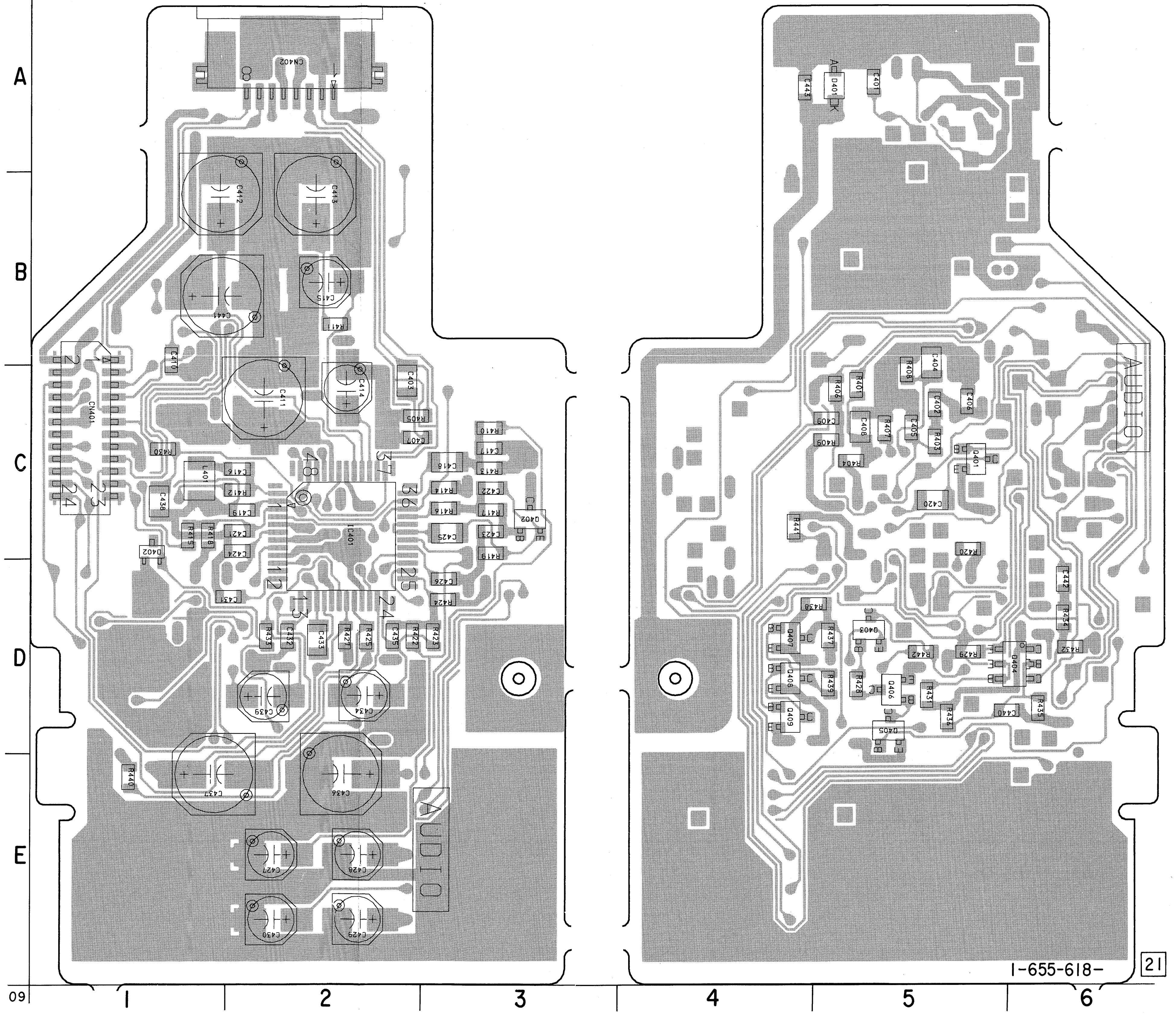
AU-182 BOARD

C402	C-5	R401	C-5
C403	C-2	R403	C-5
C404	B-5	R404	C-5
C405	C-5	R406	C-5
C407	C-2	R407	C-5
C408	C-5	R411	B-2
C409	C-5	R412	C-2
C411	C-2	R415	C-1
C412	B-2	R416	C-3
C413	B-2	R418	C-1
C414	C-2	R420	C-5
C415	B-2	R423	D-3
C416	C-2	R424	D-3
C419	C-2	R425	D-2
C421	C-2	R429	D-5
C422	C-3	R430	C-1
C424	C-2	R431	D-5
C425	C-3	R432	D-6
C426	D-3	R433	D-2
C427	E-2	R434	D-6
C428	E-2	R435	D-6
C429	E-2	R436	D-5
C430	E-2	R442	D-5
C431	D-2		
C433	D-2		
C434	D-2		
C435	D-2		
C436	E-2		
C437	E-1		
C438	C-1		
C439	D-2		
C440	D-5		
C441	B-1		
C442	D-6		
C443	A-4		
CN401	C-1		
CN402	A-2		
IC401	C-2		
L401	C-1		
Q404	D-6		


VF-44
(View Finder)
AU-182
(Audio)
ZB-2
(Buzzer/Lithium Battery)
MA-230
(Mic Amplifier)
CD-137
(CCD Imager)
SL-38
(Mecha Control)
LM-40
(Loading Motor)
FP-97
(Terminal)

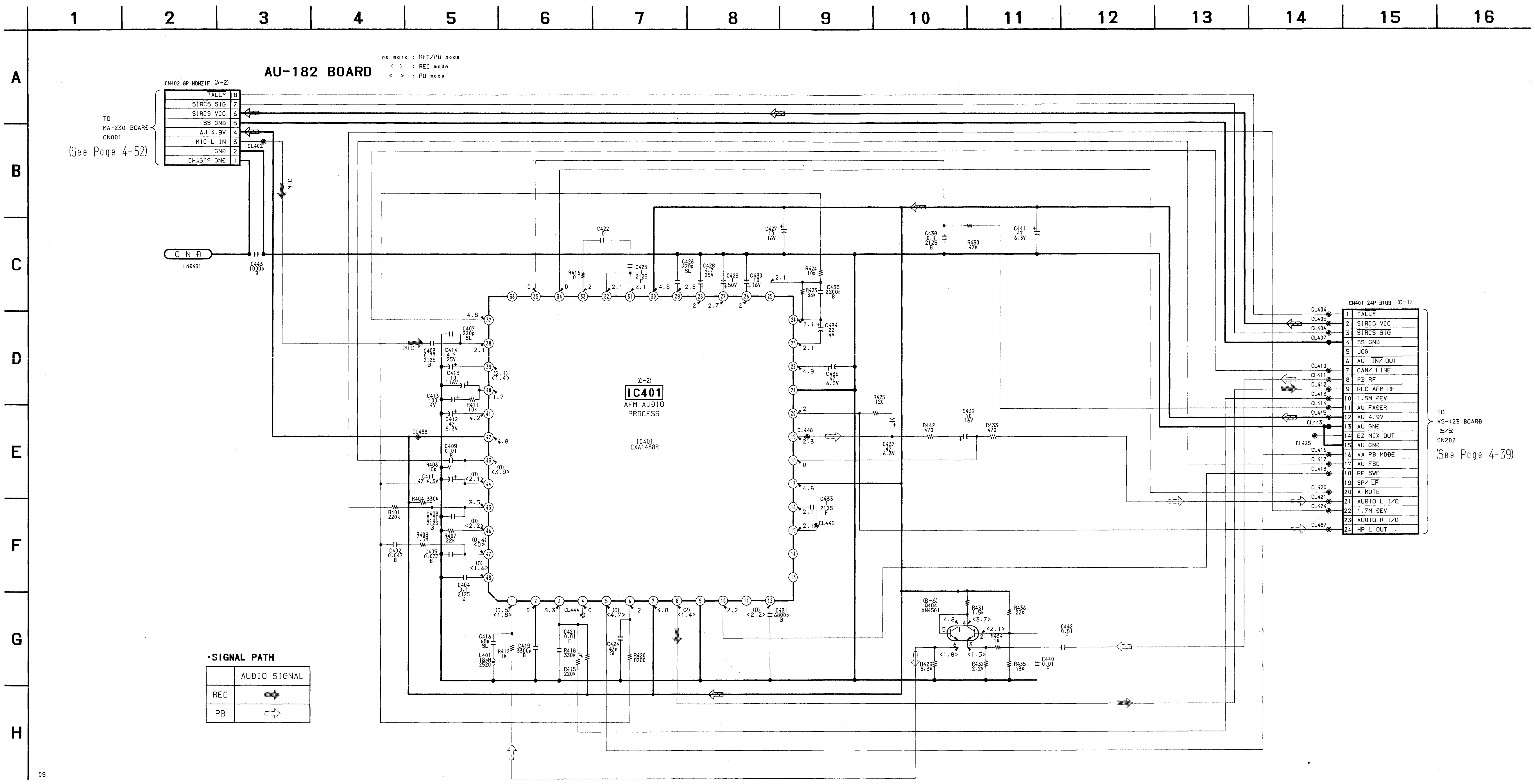
AU-182 BOARD (COMPONENT SIDE)

AU-182 BOARD (CONDUCTOR SIDE)


A
B
C
D
E
09
1
2
3
4
5
6
CN402
CN401
IC401
AUDIO
AUDIO
1-655-618-
21

AU-182 (AUDIO) SCHEMATIC DIAGRAM

— Ref. No. AU-182 BOARD: 3,000 series —



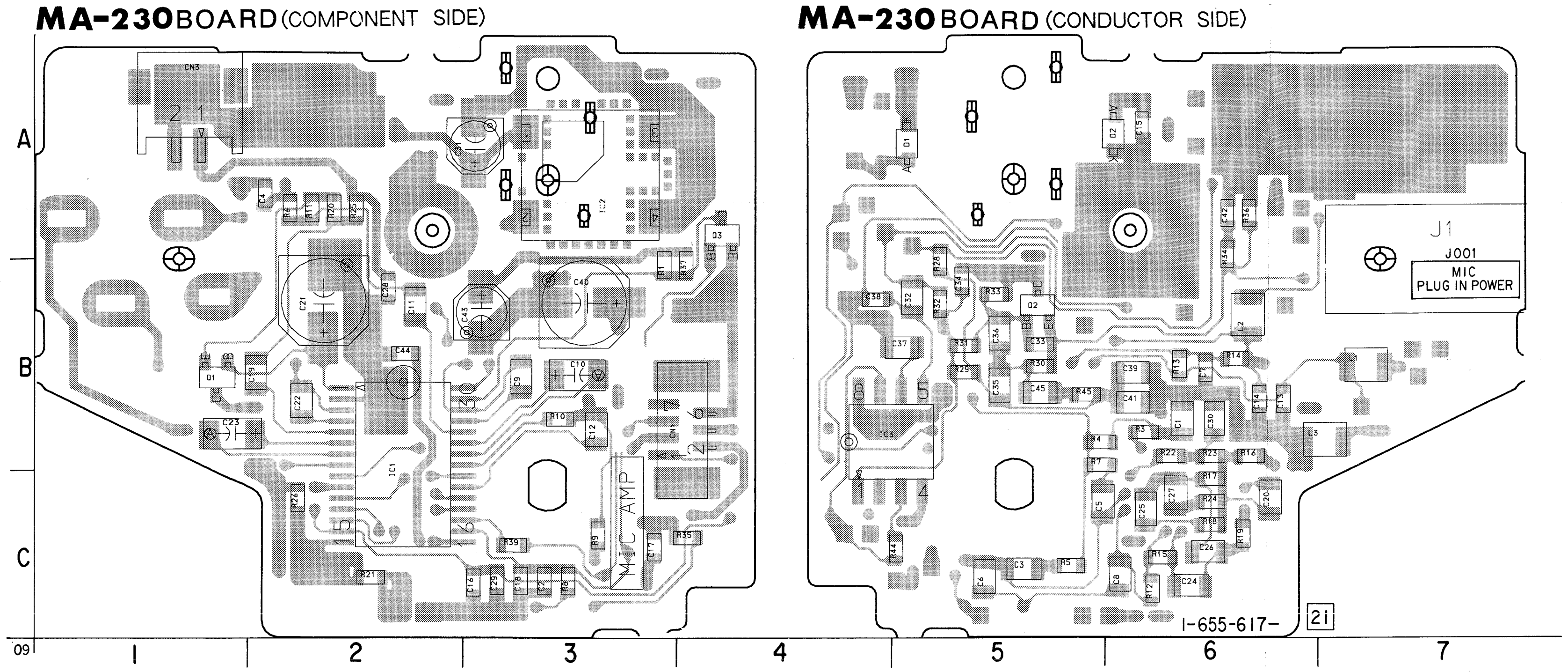
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
AU-182 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
CN402 8P NONZIF (A-2)
TO MA-230 BOARD CN001
(See Page 4-52)
1 CHASSIS GND
2 GND
3 MIC L IN
4 AU 4.9V
5 SS GND
6 SIRCS VCC
7 SIRCS SIG
8 TALLY
CL402
MIC
GND
LND401
C443 1000p B
IC401
(C-2)
AFM AUDIO PROCESS
IC401 CXA1488R
CL488
CL448
CL449
CL444
(D-6) Q404 XN4501
CN401 24P BTOB (C-1)
1 TALLY
2 SIRCS VCC
3 SIRCS SIG
4 SS GND
5 JOG
6 AU TN/ OUT
7 CAM/ LINE
8 PB RF
9 REC AFM RF
10 1.5M DEV
11 AU FADER
12 AU 4.9V
13 AU GND
14 EZ MIX OUT
15 AU GND
16 VA PB MODE
17 AU FSC
18 RF SWP
19 SP/ LP
20 A MUTE
21 AUDIO L I/O
22 1.7M DEV
23 AUDIO R I/O
24 HP L OUT
TO VS-123 BOARD (5/5) CN202
(See Page 4-39)
•SIGNAL PATH
AUDIO SIGNAL
REC
PB
09

MA-230 (MIC AMPLIFIER) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. MA-230 BOARD: 3,000 series —

There are few cases that the part isn't mounted in this model is printed on this diagram.

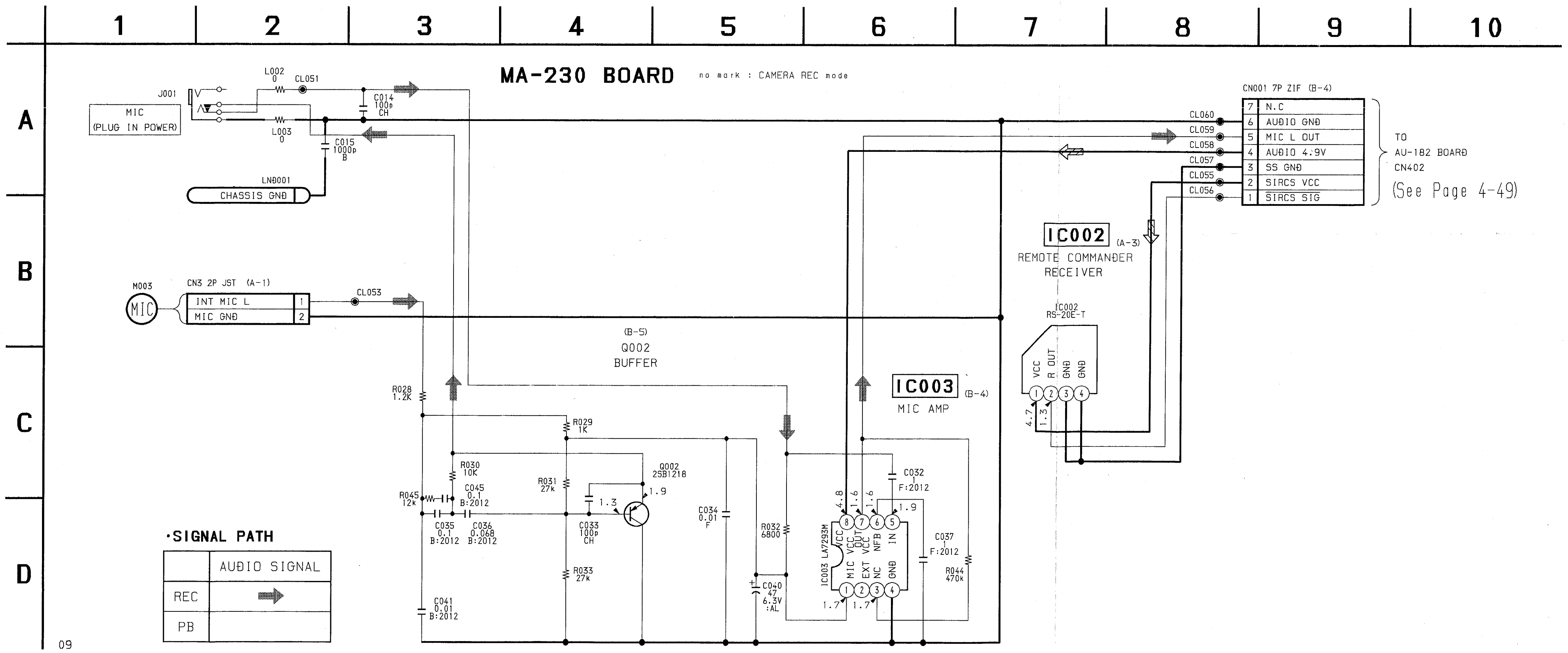
- ● : Through hole is omitted.

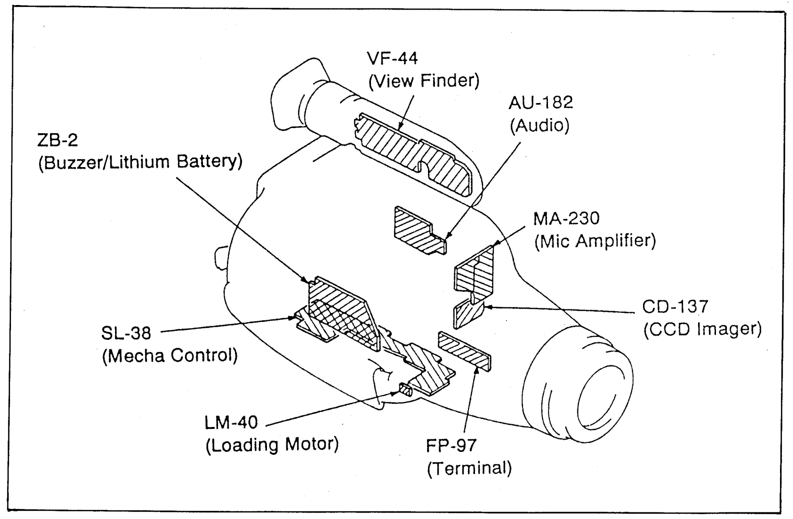

MA-230 BOARD (COMPONENT SIDE)
MA-230 BOARD (CONDUCTOR SIDE)
A
B
C
1
2
3
4
5
6
7
09
CN3
IC1
MIC AMP
J1
J001
MIC
PLUG IN POWER
1-655-617-
21

MA-230 BOARD	
C14	B-6
C15	A-6
C32	B-5
C33	B-5
C34	B-5
C35	B-5
C36	B-5
C37	B-5
C40	B-3
C41	B-6
C44	B-2
C45	B-5
CN1	B-4
CN3	A-1
IC2	A-3
IC3	B-4
J1	A-7
L2	B-6
L3	B-6
Q2	B-5
R28	B-5
R29	B-5
R30	B-5
R31	B-5
R32	B-5
R33	B-5
R44	C-5
R45	B-5

MA-230 (MIC AMPLIFIER) SCHEMATIC DIAGRAM

— Ref. No. MA-230 BOARD: 3,000 series —


1
2
3
4
5
6
7
8
9
10
A
B
C
D
MA-230 BOARD
no mark : CAMERA REC mode
J001
MIC
(PLUG IN POWER)
L002
0
CL051
C014
100p
CH
L003
0
C015
1000p
B
LND001
CHASSIS GND
M003
MIC
CN3 2P JST (A-1)
INT MIC L
MIC GND
1
2
CL053
(B-5)
Q002
BUFFER
R028
1.2K
R029
1K
R030
10K
R045
12k
C045
0.1
B:2012
C035
0.1
B:2012
C036
0.068
B:2012
R031
27k
C033
100p
CH
Q002
2SB1218
1.3
1.9
R033
27k
C041
0.01
B:2012
C034
0.01
F
R032
6800
C040
47
6.3V
:AL
IC003
MIC AMP
(B-4)
IC003 LA7293M
VCC
MIC VCC
EXT VCC
OUT
NC
NFB
GND
IN
4.8
1.6
1.6
1.9
1.7
1.7
C032
1
F:2012
C037
1
F:2012
R044
470k
IC002
REMOTE COMMANDER RECEIVER
(A-3)
IC002
RS-20E-T
VCC
R OUT
GND
GND
4.7
1.3
CN001 7P ZIF (B-4)
CL060
CL059
CL058
CL057
CL055
CL056
7 N.C
6 AUDIO GND
5 MIC L OUT
4 AUDIO 4.9V
3 SS GND
2 SIRCS VCC
1 SIRCS SIG
TO
AU-182 BOARD
CN402
(See Page 4-49)
·SIGNAL PATH
AUDIO SIGNAL
REC
PB
09

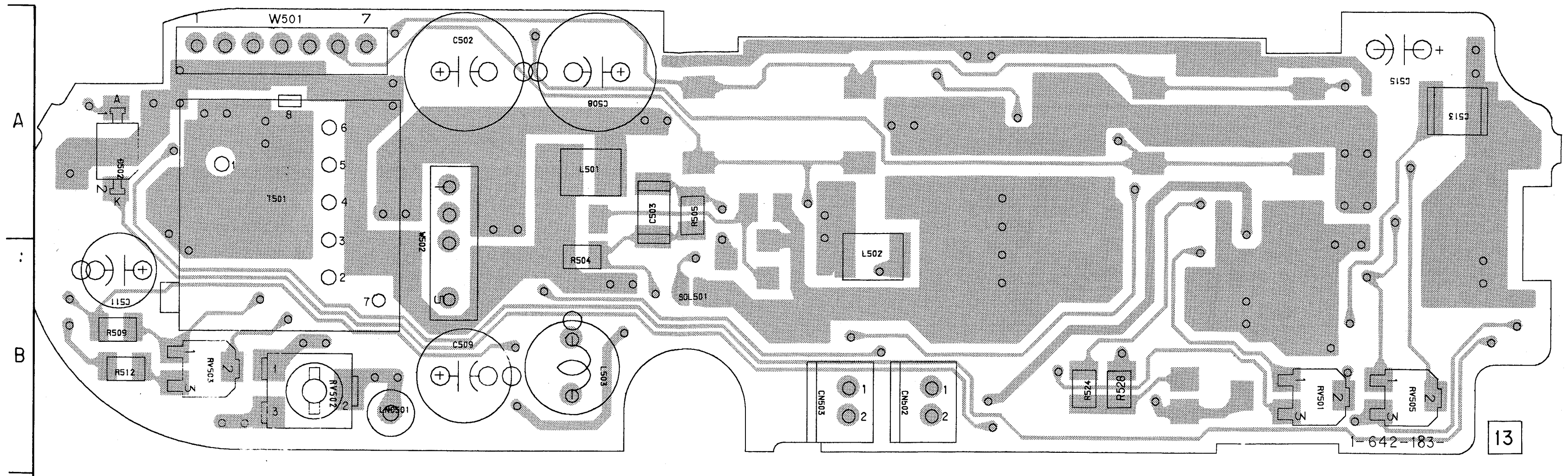

VF-44
(View Finder)
AU-182
(Audio)
ZB-2
(Buzzer/Lithium Battery)
MA-230
(Mic Amplifier)
CD-137
(CCD Imager)
SL-38
(Mecha Control)
LM-40
(Loading Motor)
FP-97
(Terminal)

VF-44 (W/B VIEWFINDER) PRINTED WIRING BOARD

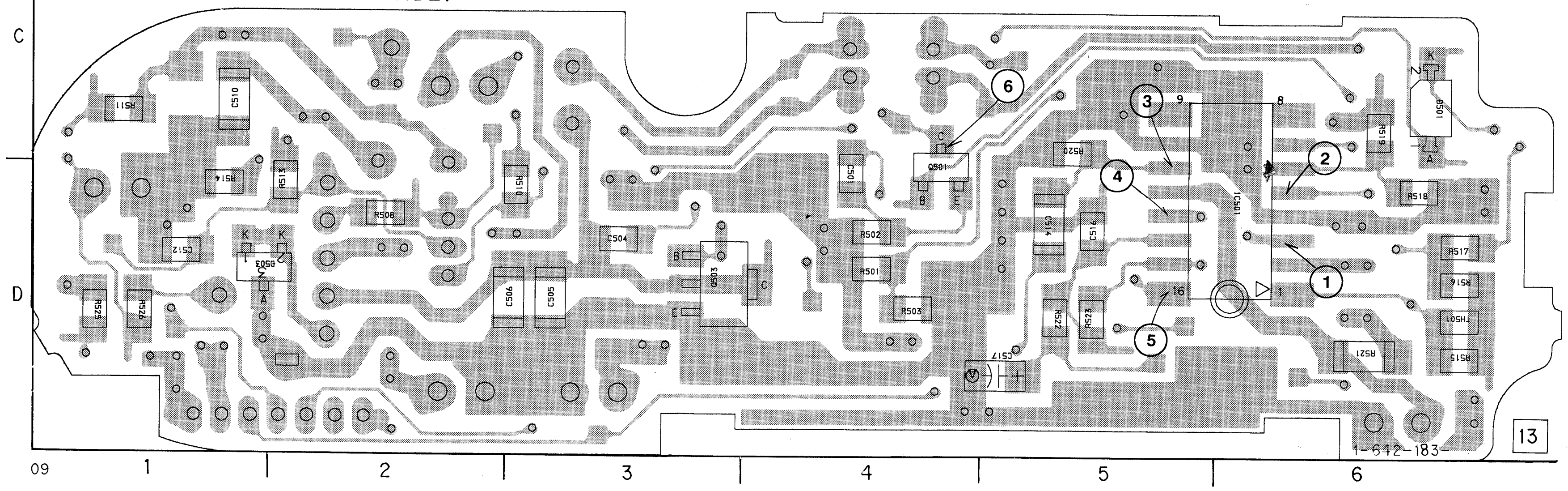
— Ref. No. VF-44 BOARD: 4,000 series —

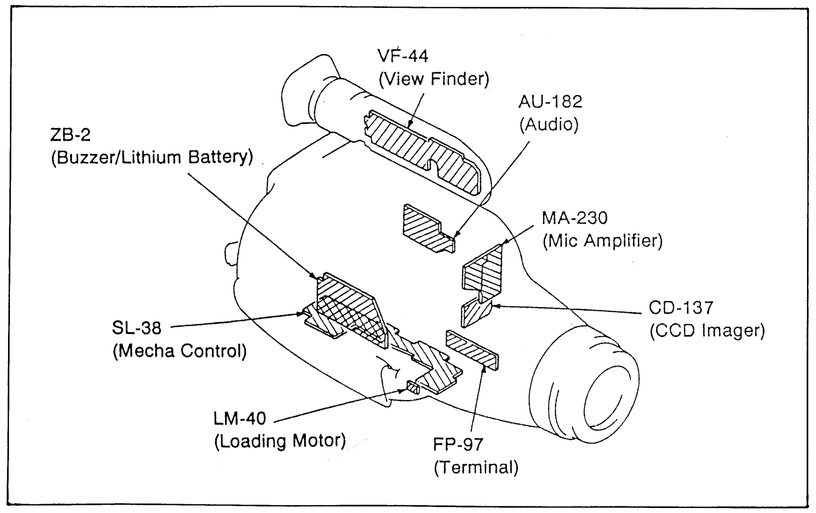
VF-44 BOARD	
C501	D-4
C502	A-2
C503	A-3
C504	D-3
C505	D-3
C506	D-3
C508	A-3
C509	B-2
C510	C-1
C511	B-1
C512	D-1
C513	A-6
C514	D-5
C515	A-6
C516	D-5
C517	D-5
CN502	B-4
CN503	B-4
D501	C-6
D502	A-1
D503	D-1
IC501	D-6
L501	A-3
L502	B-4
L503	B-3
Q501	D-4
Q503	D-3
R501	D-4
R502	D-4
R503	D-4
R504	B-3
R505	A-3
R508	D-2
R509	B-1
R510	D-3
R511	C-1
R512	B-1
R513	D-2
R514	D-1
R515	D-6
R516	D-6
R517	D-6
R518	D-6
R519	C-6
R520	C-5
R521	D-6
R522	D-5
R523	D-5
R524	B-5
R525	D-1
R526	D-1
R528	B-5
RV501	B-6
RV502	B-2
RV503	B-1
RV505	B-6
T501	A-2
TH501	D-6
W501	A-2
W502	A-2

VF-44 BOARD(COMPONENT SIDE)


A
B
W501
1
7
C502
C508
L501
C503
R505
T501
W502
R504
SOL501
L502
C511
R509
R512
RV503
RV502
C509
L503
CN503
CN502
R524
R528
RV501
RV505
C515
C513
1-642-183-
13

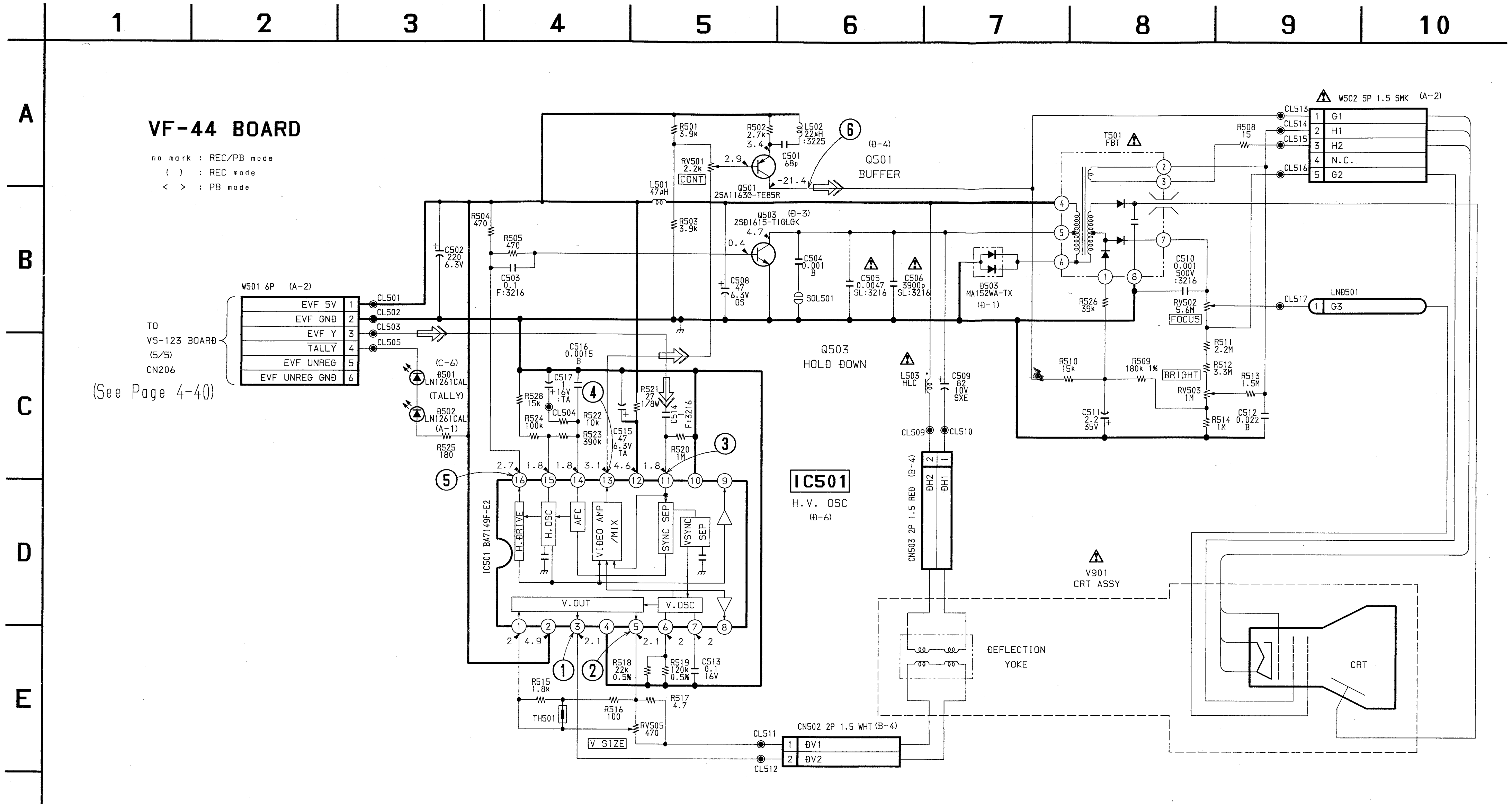
VF-44 BOARD (CONDUCTOR SIDE)


C
D
R511
C510
R514
R513
R508
R510
C512
D503
C506
C505
C504
Q503
R502
R501
R503
C501
Q501
C517
R520
C514
C516
IC501
R522
R523
R521
R519
D501
R518
R517
R516
TH501
R515
R525
R526
①
②
③
④
⑤
⑥
1-642-183-
13
09
1
2
3
4
5
6


VF-44
(View Finder)
AU-182
(Audio)
ZB-2
(Buzzer/Lithium Battery)
MA-230
(Mic Amplifier)
CD-137
(CCD Imager)
SL-38
(Mecha Control)
LM-40
(Loading Motor)
FP-97
(Terminal)

VF-44 (W/B VIEWFINDER) SCHEMATIC DIAGRAM

— Ref. No. VF-44 BOARD: 4,000 series —

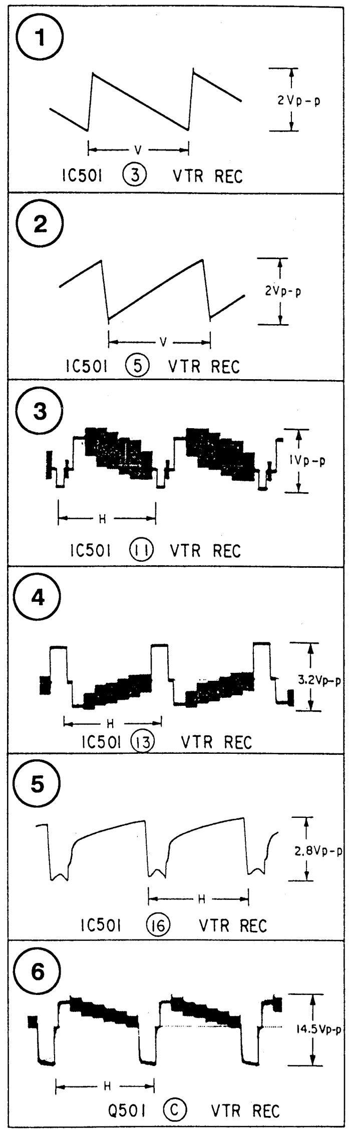

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
VF-44 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
W501 6P (A-2)
EVF 5V
EVF GND
EVF Y
TALLY
EVF UNREG
EVF UNREG GND
TO VS-123 BOARD (5/5) CN206
(See Page 4-40)
CL501
CL502
CL503
CL505
D501 LN1261CAL (TALLY) (C-6)
D502 LN1261CAL (A-1)
R525 180
R504 470
R505 470
C502 220 6.3V
C503 0.1 F:3216
R501 3.9k
RV501 2.2k CONT
R502 2.7k
L502 22µH :3225
C501 68p
Q501 2SA1163Q-TE85R
Q501 BUFFER
(D-4)
L501 47µH
R503 3.9k
Q503 2SD1615-T1GLGK (D-3)
C504 0.001 B
C508 47 6.3V OS
SOL501
C505 0.0047 SL:3216
C506 3900p SL:3216
D503 MA152WA-TX (D-1)
Q503 HOLD DOWN
T501 FBT
R508 15
W502 5P 1.5 SMK (A-2)
CL513
CL514
CL515
CL516
G1
H1
H2
N.C.
G2
C510 0.001 500V :3216
R526 39k
RV502 5.6M FOCUS
CL517
LND501
G3
R511 2.2M
R512 3.3M
R513 1.5M
R510 15k
R509 180k 1%
BRIGHT
RV503 1M
R514 1M
C512 0.022 B
C511 2.2 35V
L503 HLC
C509 82 10V SXE
CL509
CL510
CN503 2P 1.5 RED (B-4)
DH2
DH1
IC501 H.V. OSC (D-6)
V901 CRT ASSY
DEFLECTION YOKE
CRT
C516 0.0015 B
C517 1 16V TA
CL504
R528 15k
R524 100k
R522 10k
R523 390k
C515 47 6.3V TA
R521 27 1/8W
C514 1 F:3216
R520 1M
IC501 BA7149F-E2
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
R515 1.8k
TH501
R516 100
R517 4.7
R518 22k 0.5%
R519 120k 0.5%
C513 0.1 16V
RV505 470
V SIZE
CL511
CL512
CN502 2P 1.5 WHT (B-4)
DV1
DV2

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

·SIGNAL PATH

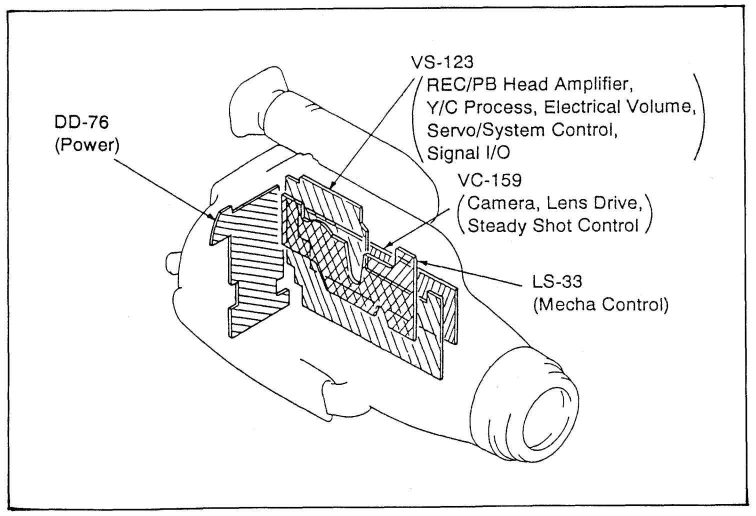
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			
PB		⇨	

VF-44 BOARD



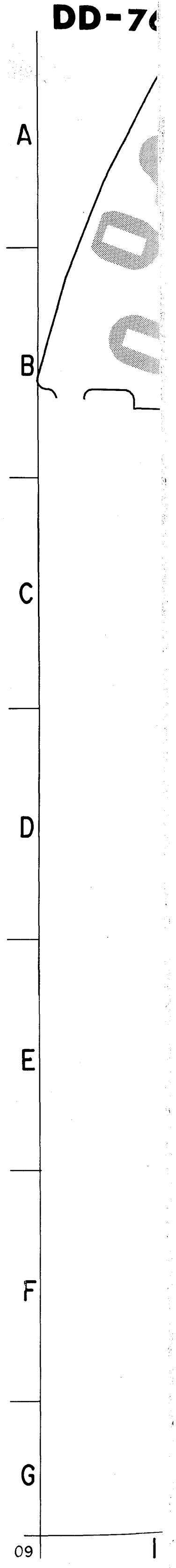
DD-76 BOARD

C901	A-10
C902	A-9
C903	A-9
C904	A-9
C906	B-2
C907	B-10
C908	B-2
C909	C-2
C910	B-9
C911	B-10
C912	E-5
C913	C-2
C914	C-2
C915	C-9
C917	B-9
C918	D-9
C920	B-8
C921	C-8
C923	C-8
C924	D-8
C925	B-4
C926	B-4
C927	D-8
C928	D-9
C929	A-8
C930	B-4
C931	D-5
C932	D-5
C934	C-5
C936	C-5
C938	B-5
C939	B-3
C940	B-3
C941	B-3
C942	A-2
C943	B-2
C944	B-2
C945	E-4
C946	B-2
C950	B-5
CN901	D-6
D901	B-9
D909	C-8
D910	B-10
IC901	B-3
J901	F-8
J902	A-11
J903	B-11
L901	C-3
L902	C-3
L903	D-3
L904	B-4
L905	C-4
L906	C-4
L907	D-4
L908	D-4
L909	D-7
L910	C-7
L912	C-7
L914	A-8
L915	A-7
L916	D-8
L917	C-7
L918	A-2
L919	B-10
PS450	E-4
PS451	E-4
PS452	E-5
Q901	B-8
Q902	C-9
Q903	B-8
Q904	C-8
Q905	D-8
Q906	C-9
Q907	D-9
Q909	C-7
Q914	C-7
Q915	B-4
R901	A-9
R902	A-2
R903	B-3
R904	B-2
R905	B-2
R906	B-3
R907	B-2
R908	B-3
R909	B-10
R910	B-2
R911	C-2
R912	B-9
R913	B-10
R916	C-5
R917	D-7
R918	B-7
R919	B-4
R920	B-4
R922	B-8
R924	A-10
R925	C-10
R927	B-9
R928	B-10
R931	B-9
R932	B-2
R936	B-2
R937	B-7
R938	B-4
R940	A-4
R941	B-10
R944	B-7
R945	B-10
T901	B-4


VS-123
(REC/PB Head Amplifier, Y/C Process, Electrical Volume, Servo/System Control, Signal I/O)
DD-76
(Power)
VC-159
(Camera, Lens Drive, Steady Shot Control)
LS-33
(Mecha Control)

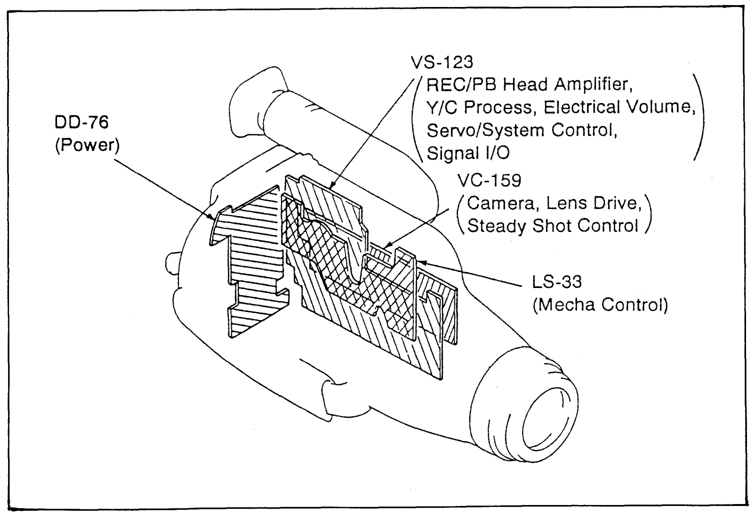
DD-76 (POW

— Ref. No. DD-7


DD-7
A
B
C
D
E
F
G
09

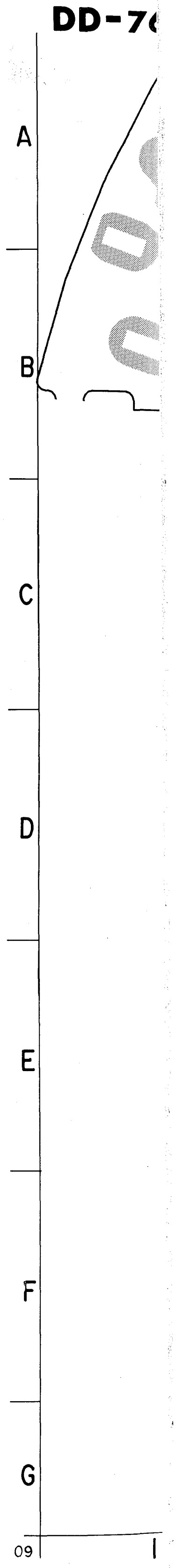
DD-76 BOARD

C901	A-10
C902	A-9
C903	A-9
C904	A-9
C906	B-2
C907	B-10
C908	B-2
C909	C-2
C910	B-9
C911	B-10
C912	E-5
C913	C-2
C914	C-2
C915	C-9
C917	B-9
C918	D-9
C920	B-8
C921	C-8
C923	C-8
C924	D-8
C925	B-4
C926	B-4
C927	D-8
C928	D-9
C929	A-8
C930	B-4
C931	D-5
C932	D-5
C934	C-5
C936	C-5
C938	B-5
C939	B-3
C940	B-3
C941	B-3
C942	A-2
C943	B-2
C944	B-2
C945	E-4
C946	B-2
C950	B-5
CN901	D-6
D901	B-9
D909	C-8
D910	B-10
IC901	B-3
J901	F-8
J902	A-11
J903	B-11
L901	C-3
L902	C-3
L903	D-3
L904	B-4
L905	C-4
L906	C-4
L907	D-4
L908	D-4
L909	D-7
L910	C-7
L912	C-7
L914	A-8
L915	A-7
L916	D-8
L917	C-7
L918	A-2
L919	B-10
PS450	E-4
PS451	E-4
PS452	E-5
Q901	B-8
Q902	C-9
Q903	B-8
Q904	C-8
Q905	D-8
Q906	C-9
Q907	D-9
Q909	C-7
Q914	C-7
Q915	B-4
R901	A-9
R902	A-2
R903	B-3
R904	B-2
R905	B-2
R906	B-3
R907	B-2
R908	B-3
R909	B-10
R910	B-2
R911	C-2
R912	B-9
R913	B-10
R916	C-5
R917	D-7
R918	B-7
R919	B-4
R920	B-4
R922	B-8
R924	A-10
R925	C-10
R927	B-9
R928	B-10
R931	B-9
R932	B-2
R936	B-2
R937	B-7
R938	B-4
R940	A-4
R941	B-10
R944	B-7
R945	B-10
T901	B-4


VS-123
(REC/PB Head Amplifier,
Y/C Process, Electrical Volume,
Servo/System Control,
Signal I/O)
DD-76
(Power)
VC-159
(Camera, Lens Drive,
Steady Shot Control)
LS-33
(Mecha Control)

DD-76 (POW

— Ref. No. DD-7


DD-7
A
B
C
D
E
F
G
09

A-9
A-2
B-3
B-2
B-2
B-3
B-2
B-3
B-10
B-2
C-2
B-9
B-10
C-5
D-7
B-7
B-4
B-4
B-8
A-10
C-10
B-9
B-10
B-9
B-2
B-2
B-7
B-4
A-4
B-10
B-7
B-10

B-4

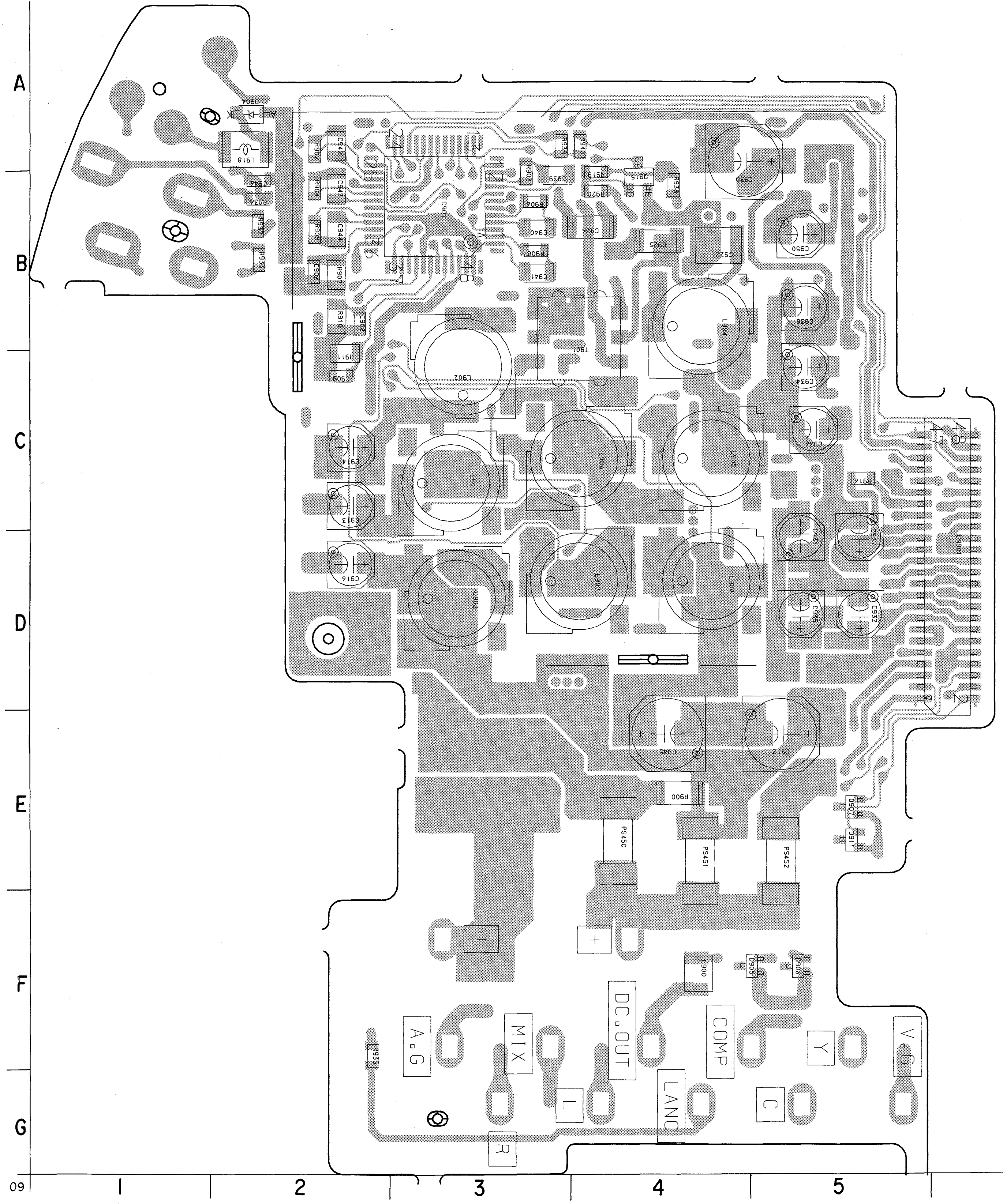
DD-76 (POWER SUPPLY) PRINTED WIRING BOARD

— Ref. No. DD-76 BOARD: 5,000 series —

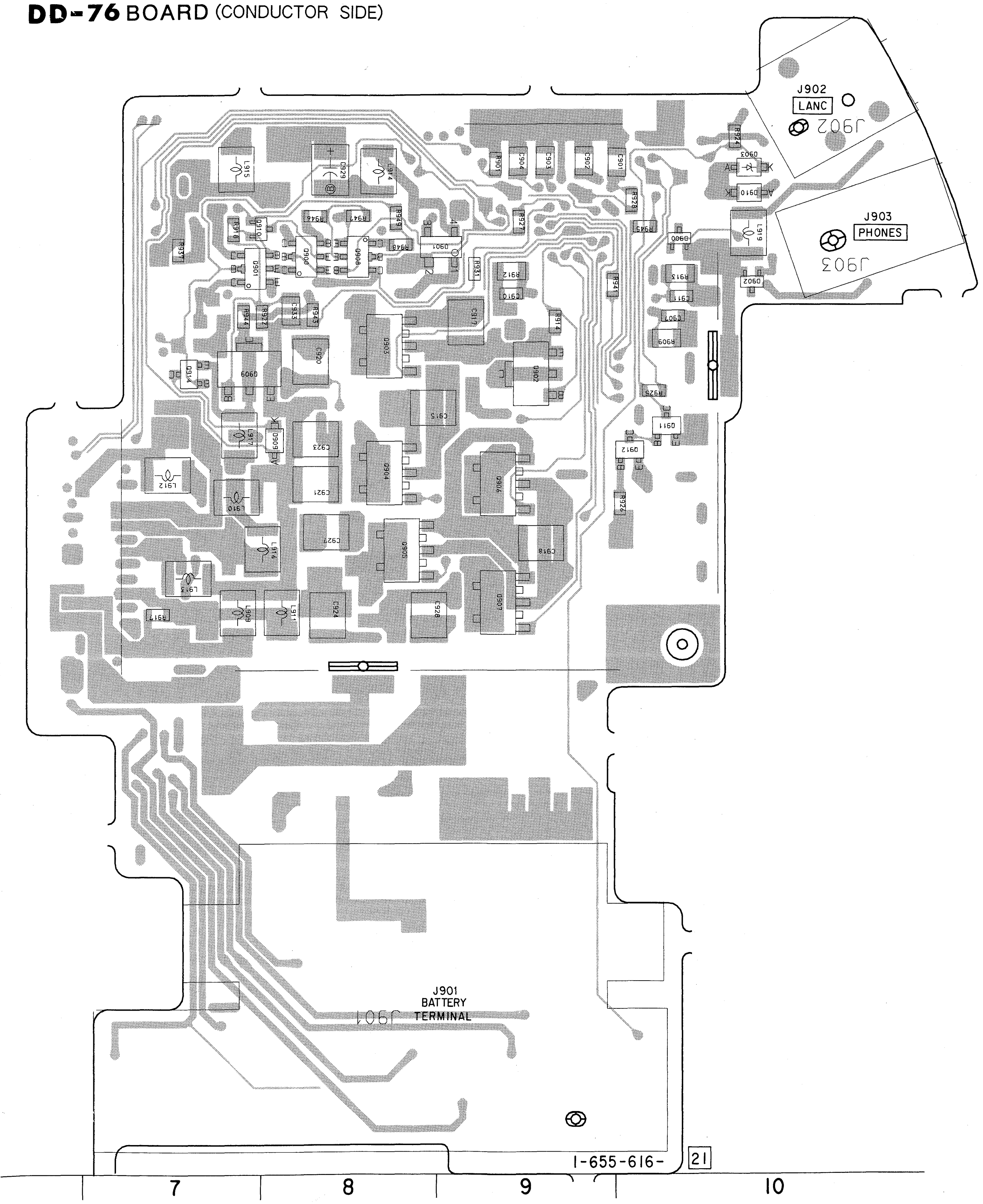
• ● : Through hole is omitted.

There are few cases that the part isn't mounted in this model is printed on this diagram.

DD-76 BOARD (COMPONENT SIDE)

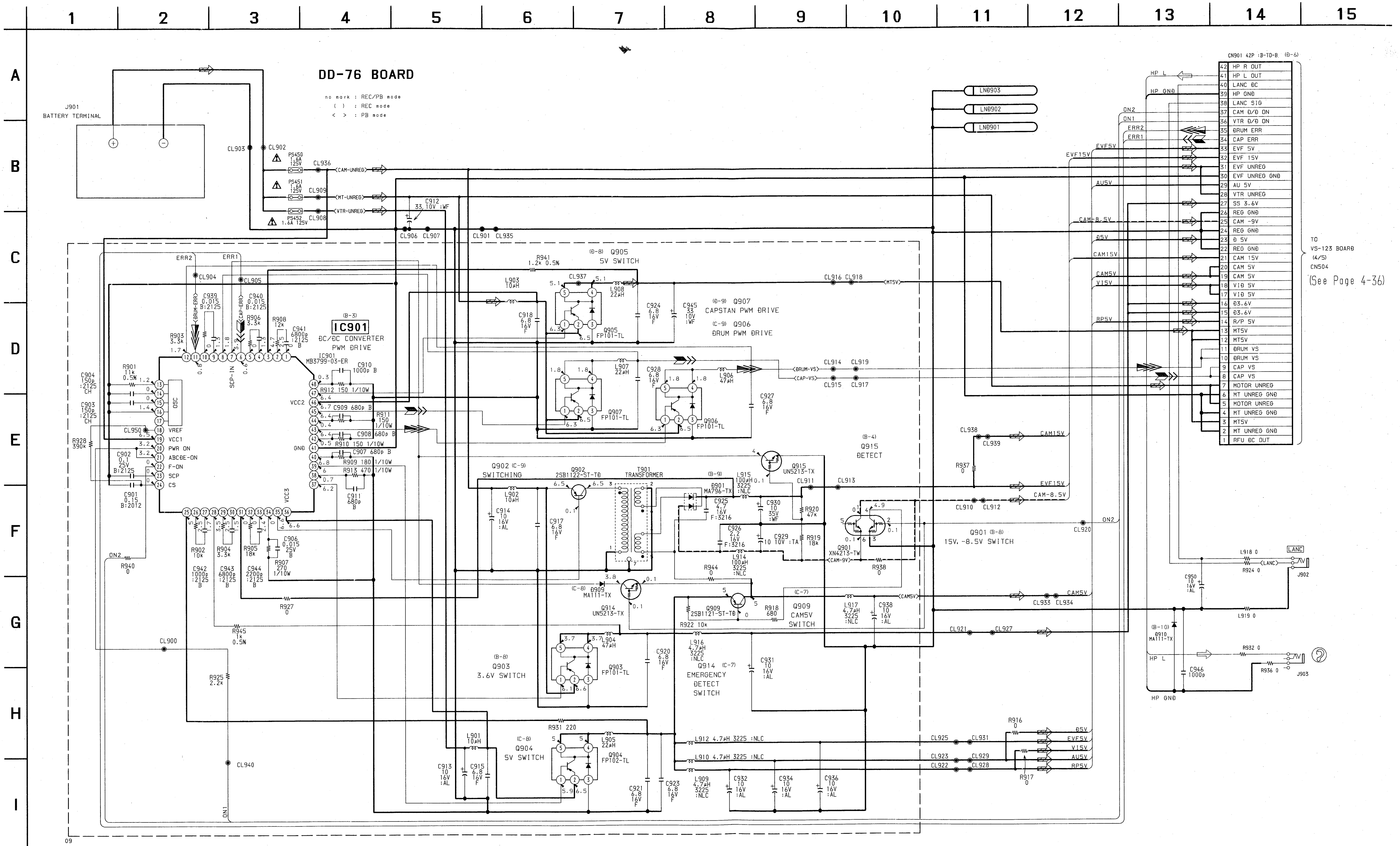

A
B
C
D
E
F
G
09
1
2
3
4
5
A.G
MIX
DC.OUT
COMP
Y
V.G
L
LANC
C
R
+
−
PS450
PS451
PS452
R900
L901
L902
L903
L904
L905
L906
L907
L908
C930
C945
C912
IC901
T901

DD-76 BOARD (CONDUCTOR SIDE)


J902
LANC
J903
PHONES
J901
BATTERY
TERMINAL
1-655-616-
21
6
7
8
9
10

DD-76 (POWER SUPPLY) SCHEMATIC DIAGRAM

— Ref. No. DD-76 BOARD: 5,000 series —


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
DD-76 BOARD
no mark : REC/PB mode
( ) : REC mode
< > : PB mode
J901
BATTERY TERMINAL
CL903
CL902
PS450 1.6A 125V
PS451 1.6A 125V
PS452 1.6A 125V
CL936
CL909
CL908
<CAM-UNREG>
<MT-UNREG>
<VTR-UNREG>
C912 33 10V :WF
CL906 CL907 CL901 CL935
ERR2 ERR1
CL904 CL905
(B-3)
IC901
DC/DC CONVERTER
PWM DRIVE
IC901 MB3799-03-ER
VCC2
VCC3
GND
VREF
VCC1
PWR ON
ABCDE-ON
F-ON
SCP
CS
OSC
SCP-IN
R941 1.2k 0.5%
(D-8) Q905
5V SWITCH
Q905 FP101-TL
L903 10μH
L908 22μH
C918 6.8 16V F
C924 6.8 16V F
C945 33 10V :WF
(D-9) Q907
CAPSTAN PWM DRIVE
(C-9) Q906
DRUM PWM DRIVE
Q907 FP101-TL
Q906 FP101-TL
L907 22μH
L906 47μH
C928 6.8 16V F
C927 6.8 16V F
CL916 CL918 <MT5V>
CL914 CL919 <DRUM-VS>
CL915 CL917 <CAP-VS>
(B-4)
Q915
DETECT
Q915 UN5213-TX
Q902 (C-9)
SWITCHING
Q902 2SB1122-ST-TD
T901
TRANSFORMER
D901 MA796-TX
L915 100μH 3225 :NLC
L902 10μH
C914 10 16V :AL
C917 6.8 16V F
C925 4.7 16V F:3216
C926 2.2 16V F:3216
C929 10 10V :TA
C930 10 35V :WF
R919 18k
R920 47k
L914 100μH 3225 :NLC
R944 0
(C-8) D909 MA111-TX
Q914 UN5213-TX
Q909 2SB1121-ST-TD
R918 680
Q909
CAM5V
SWITCH
R922 10k
L917 4.7μH 3225 :NLC
C938 10 16V :AL
Q901 (B-8)
15V, -8.5V SWITCH
Q901 XN4213-TW
<CAM-9V>
R938 0
CL938 CL939 CAM15V
R937 0
CL911 CL913
EVF15V
CAM-8.5V
CL910 CL912
CL920 ON2
CAM5V
CL933 CL934
CL921 CL927
(B-8)
Q903
3.6V SWITCH
Q903 FP101-TL
L904 47μH
C920 6.8 16V F
L916 4.7μH 3225 :NLC
Q914 (C-7)
EMERGENCY
DETECT
SWITCH
C931 10 16V :AL
L901 10μH
(C-8)
Q904
5V SWITCH
Q904 FP102-TL
R931 220
L905 22μH
C913 10 16V :AL
C915 6.8 16V F
C921 6.8 16V F
C923 6.8 16V F
L912 4.7μH 3225 :NLC
L910 4.7μH 3225 :NLC
L909 4.7μH 3225 :NLC
C932 10 16V :AL
C934 10 16V :AL
C936 10 16V :AL
CL925 CL931
CL923 CL929
CL922 CL928
R916 0
R917 0
D5V EVF5V VI5V AU5V RP5V
CL900
CL940
R945 1k 0.5%
R925 2.2k
R927 0
R940 0
ON2
ON1
R901 11k 0.5%
R903 3.3k
R906 3.3k
R908 12k
C904 150p :2125 CH
C903 150p :2125 CH
R928 390k
C902 0.1 25V B:2125
C901 0.15 B:2012
C939 0.015 B:2125
C940 0.015 B:2125
C941 6800p :2125 B
C910 1000p B
R912 150 1/10W
C909 680p B
R911 150 1/10W
C908 680p B
R910 150 1/10W
C907 680p B
R909 180 1/10W
R913 470 1/10W
C911 680p B
R902 10k
R904 3.3k
R905 18k
C906 0.015 25V B
R907 270 1/10W
C942 1000p :2125 B
C943 6800p :2125 B
C944 2200p :2125 B
LND903 LND902 LND901
HP L
HP GND
ON2 ON1 ERR2 ERR1
EVF5V EVF15V AU5V CAM-8.5V D5V CAM15V CAM5V VI5V RP5V
CN901 42P :B-TO-B. (D-6)
42 HP R OUT
41 HP L OUT
40 LANC DC
39 HP GND
38 LANC SIG
37 CAM D/D ON
36 VTR D/D ON
35 DRUM ERR
34 CAP ERR
33 EVF 5V
32 EVF 15V
31 EVF UNREG
30 EVF UNREG GND
29 AU 5V
28 VTR UNREG
27 SS 3.6V
26 REG GND
25 CAM -9V
24 REG GND
23 D 5V
22 REG GND
21 CAM 15V
20 CAM 5V
19 CAM 5V
18 VID 5V
17 VID 5V
16 D3.6V
15 D3.6V
14 R/P 5V
13 MT5V
12 MT5V
11 DRUM VS
10 DRUM VS
9 CAP VS
8 CAP VS
7 MOTOR UNREG
6 MT UNREG GND
5 MOTOR UNREG
4 MT UNREG GND
3 MT5V
2 MT UNREG GND
1 RFU DC OUT
TO
VS-123 BOARD
(4/5)
CN504
(See Page 4-36)
LANC
L918 0
R924 0
<LANC>
J902
C950 10 16V :AL
L919 0
(B-10)
D910 MA111-TX
HP L
C946 1000p
R932 0
R936 0
J903
HP GND
09

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

·SIGNAL PATH

	AUDIO SIGNAL
REC	
PB	⇨

·SIGNAL PATH

	REC	REC/PB	PB
Drum servo (speed and phase)		⋙	
Capstan servo (speed and phase)		⋙	

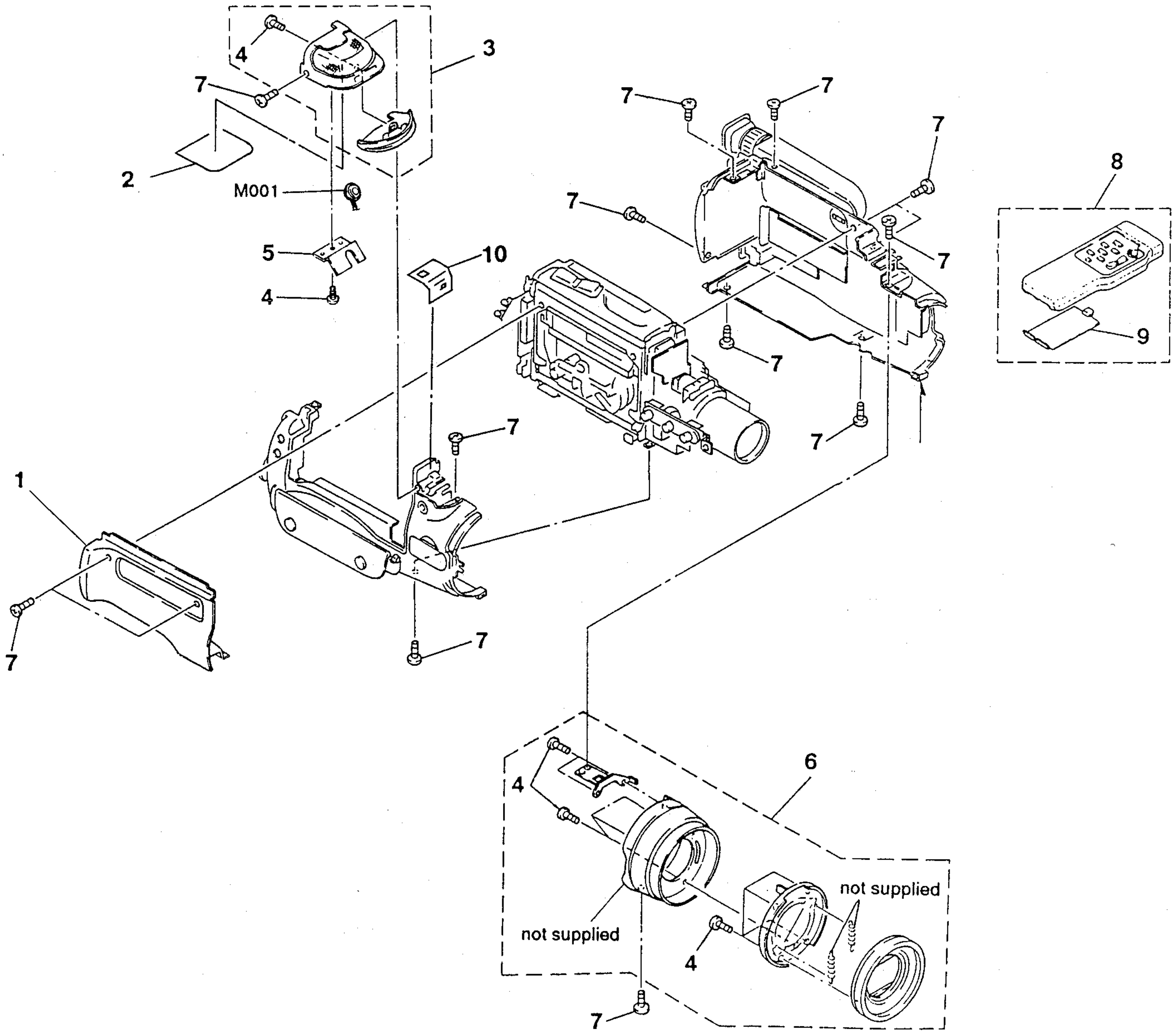
SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

NOTE:
- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " ∗ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

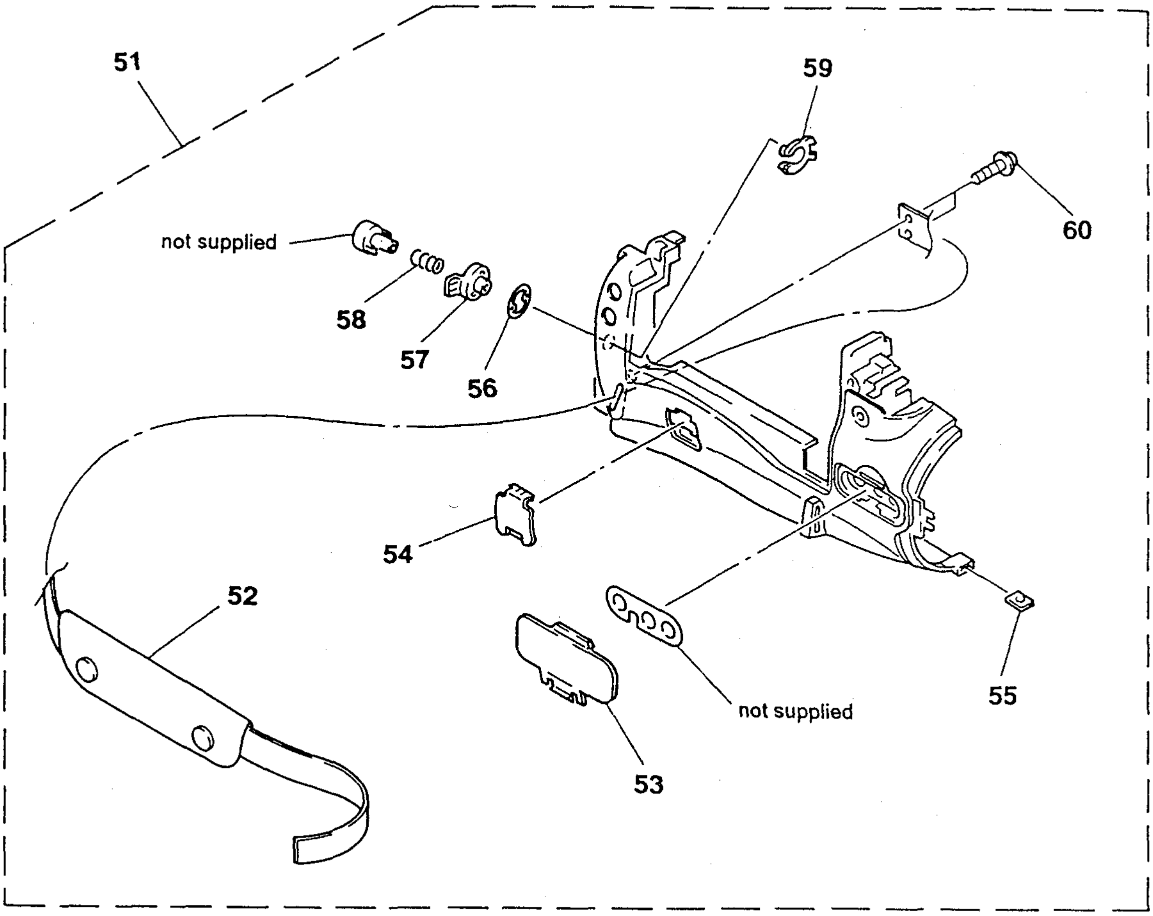
5-1-1. FRONT CASE BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark
1	X-3944-867-1	LID ASSY, CASSETTE	
2	3-963-089-01	CUSHION (I), HOLDER	
3	X-3944-866-1	HOLDER (SL) ASSY, MICROPHONE	
4	3-948-339-01	SCREW, TAPPING	
∗ 5	3-958-672-01	PLATE, FIXED (W), MICROPHONE	
6	A-7082-608-A	CASE (L) BLOCK ASSY, FRONT	

Ref. No.	Part No.	Description	Remark
7	3-719-381-01	SCREW (M2X4)	
8	1-467-574-21	REMOTE COMMANDER (RMT-708)(AEP, UK, RUSSIA)	
9	3-958-131-01	LID, BATTERY CASE (for RMT-708)	(AEP, UK, RUSSIA)
10	3-964-036-01	CUSHION (I), MN	
M001	1-542-259-11	MICROPHONE, CAP	

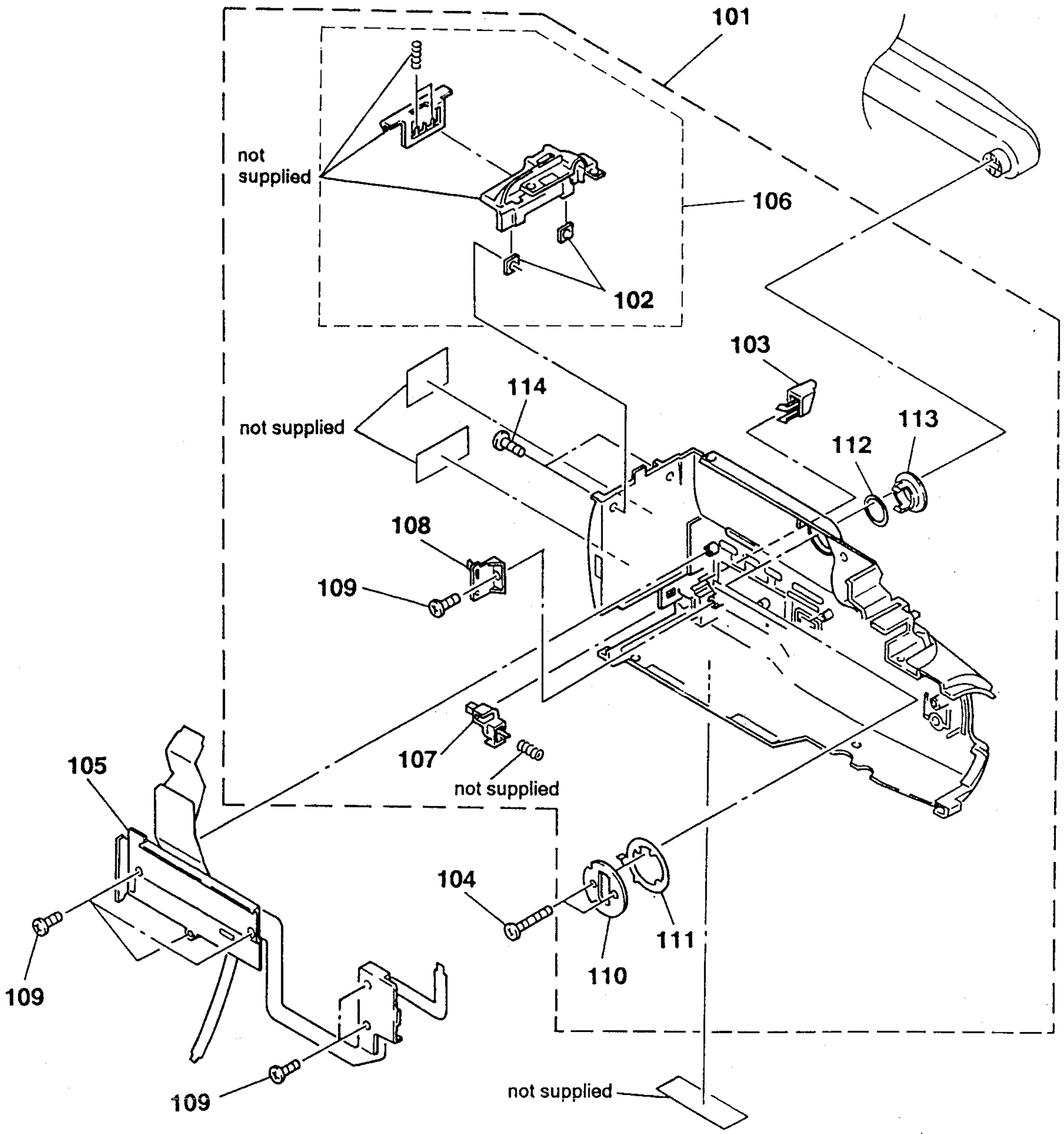
5-1-2. CABINET (L) BLOCK ASSEMBLY


51
59
60
not supplied
58
57
56
54
52
not supplied
55
53

Ref. No.	Part No.	Description	Remark
51	A-7082-803-A	CABINET (L) BLOCK ASSY (L)	
52	3-736-807-01	BELT, GRIP	
53	3-958-335-01	COVER, JACK	
54	3-958-334-01	LID, BATTERY CASE, LITHIUM	
55	3-718-233-01	NUT, PLATE	

Ref. No.	Part No.	Description	Remark
56	3-736-364-01	SPRING	
57	3-942-985-01	KNOB, STAND-BY	
58	3-578-221-00	SPRING, COMPRESSION	
59	3-942-953-01	HOLDER, STAND-BY KNOB	
60	3-669-480-21	+ PTPWH 2	

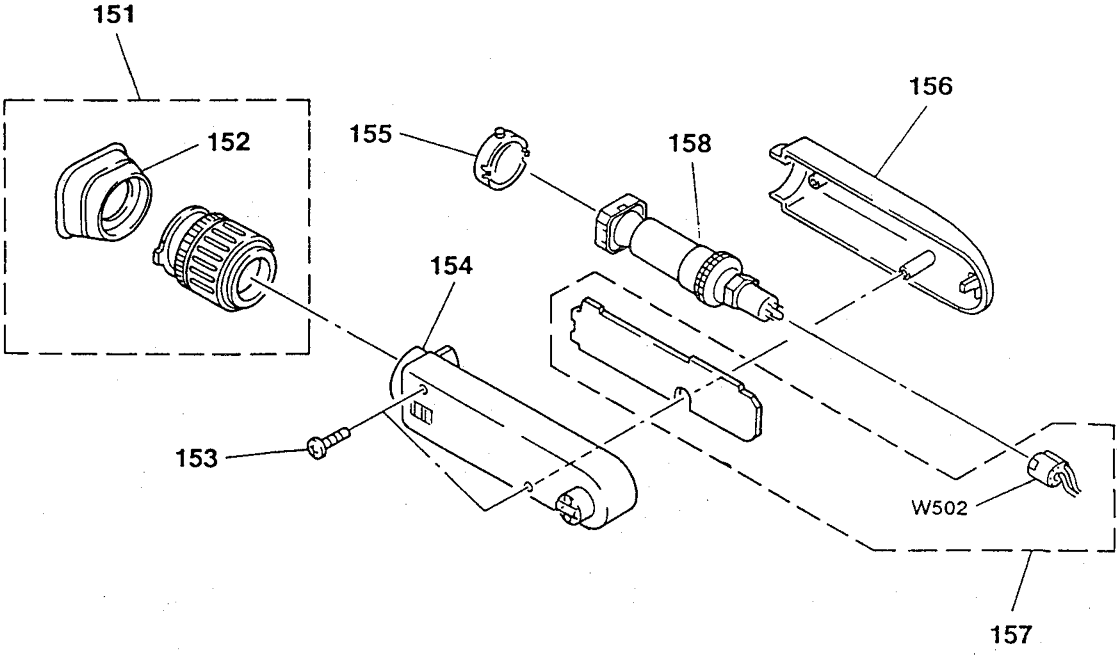
5-1-3. CABINET (R) BLOCK ASSEMBLY


101
not
supplied
106
102
103
114
not supplied
113
112
108
109
105
107
not supplied
104
111
110
109
109
not supplied

Ref. No.	Part No.	Description	Remark
101	X-3944-932-1	CABINET (R) ASSY	
102	3-718-233-01	NUT, PLATE	
103	3-958-320-01	BUTTON, BATTERY RELEASE	
104	3-740-546-51	SCREW (M2X9)	
105	1-467-648-22	SWITCH BLOCK, CONTROL (CK)	
106	X-3944-943-1	HOLDER ASSY, CLAW	
107	3-958-321-01	CLAW (LOWER), BATTERY LOCK	
108	3-958-322-01	HOLDER, BATTERY LOCK	

Ref. No.	Part No.	Description	Remark
109	3-948-339-01	SCREW, TAPPING	
* 110	3-958-297-01	PLATE, LOCK, TILT	
* 111	3-958-296-01	SPRING, PLATE, TILT	
112	3-747-112-01	RING, TILT	
113	3-747-109-01	SLEEVE, EVF	
114	3-719-381-01	SCREW (M2X4)	

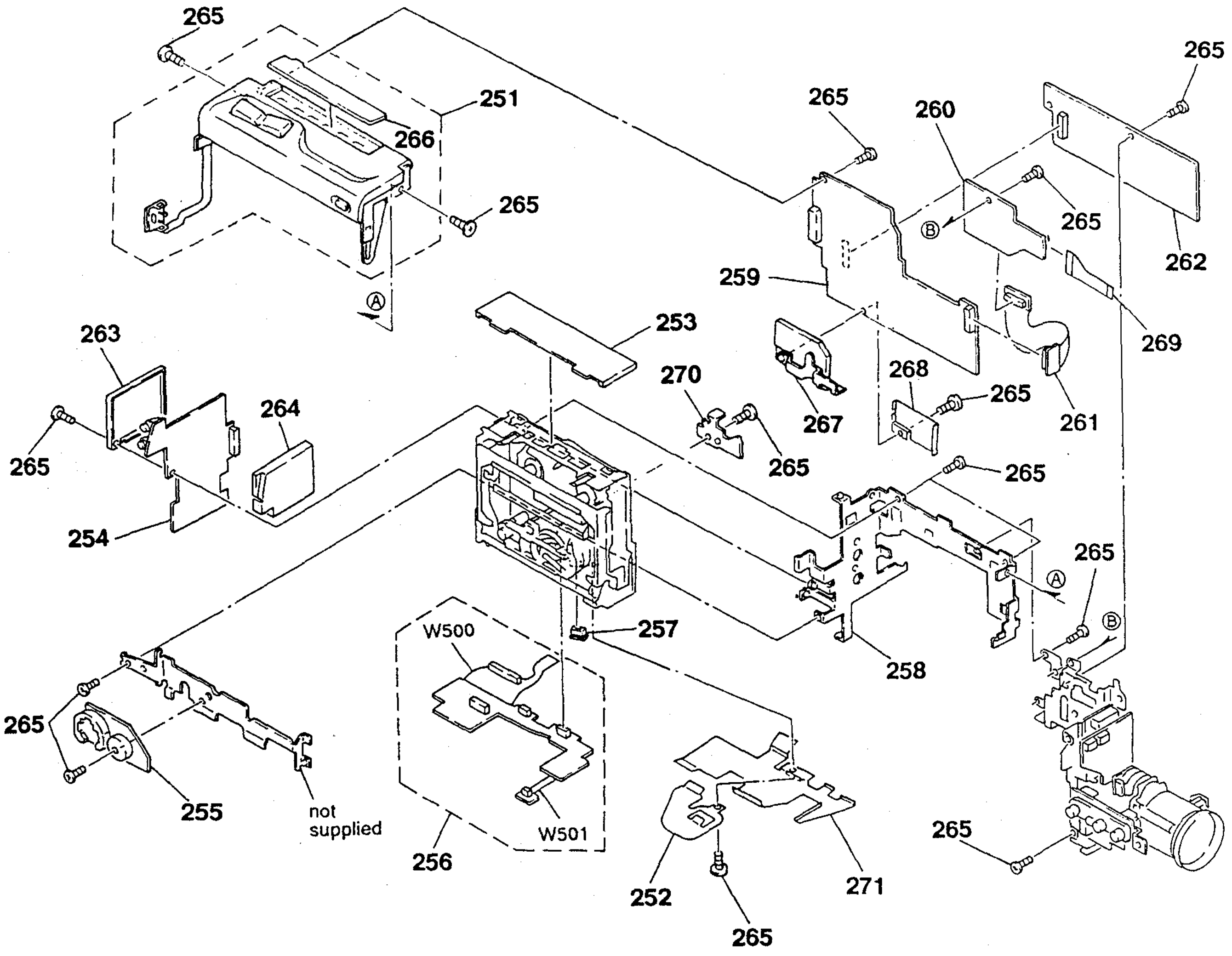
5-1-4. EVF BLOCK ASSEMBLY



The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

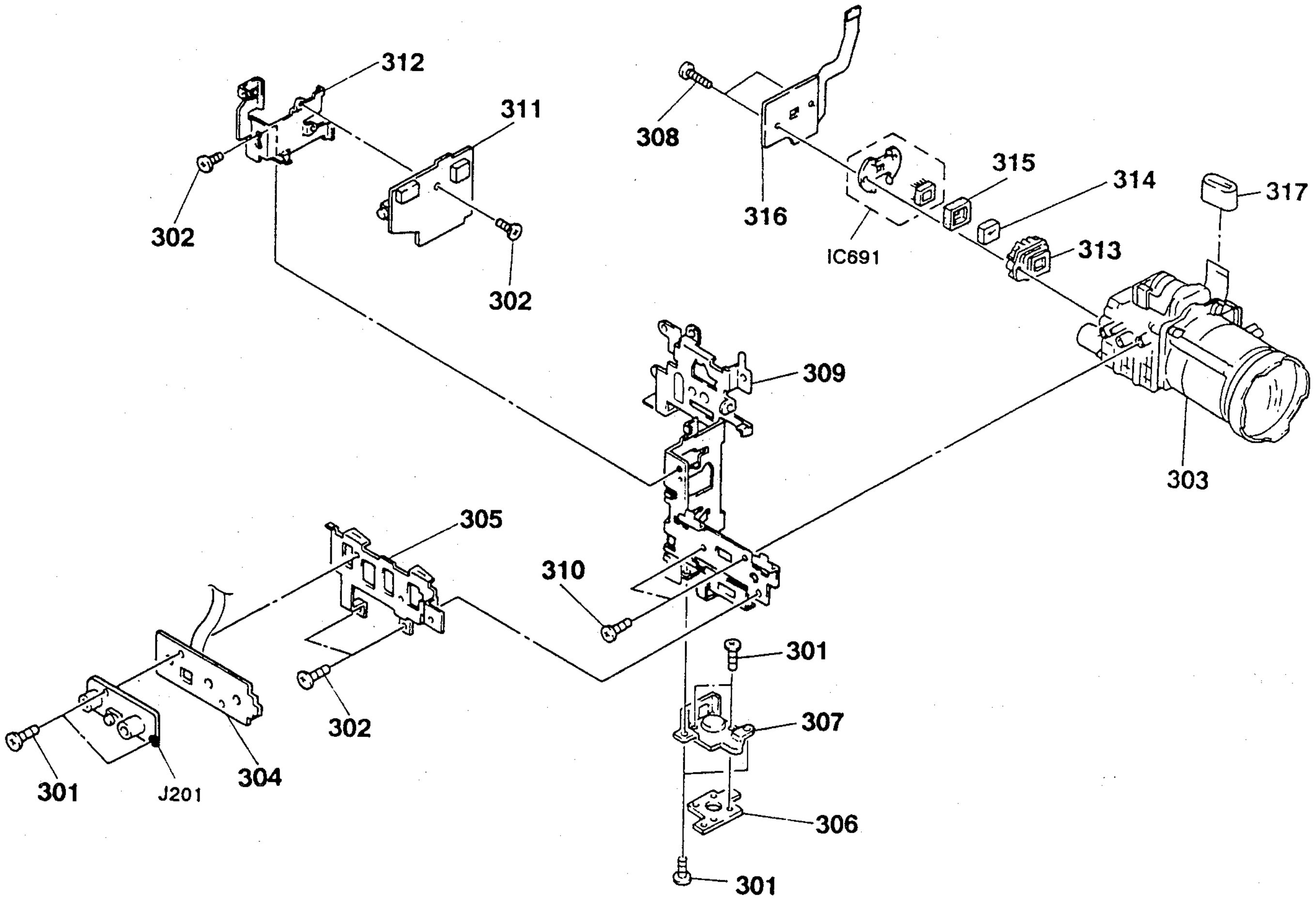
Ref. No.	Part No.	Description	Remark
151	A-7081-897-C	HOLDER BLOCK ASSY, FINDER	
152	3-946-212-01	EYE CUP	
153	3-713-790-31	SCREW (M2X8), TAPPING, P3	
154	X-3943-848-1	CABINET(L)ASSY, EVF	
155	A-7081-905-E	LENS ASSY, VF	
156	X-3943-844-1	CABINET(R)ASSY, EVF	
* 157	A-7066-194-A	VF-44P BOARD, COMPLETE	
⚠158	1-452-566-11	CRT ASSY (M01KKX07WB10)	
⚠W502	1-526-978-51	SOCKET ASSY, CRT	

5-1-5. MAIN BOARDS ASSEMBLY


265
251
266
265
Ⓐ
263
264
265
254
253
270
265
265
260
265
262
259
269
268
265
267
261
265
265
Ⓐ
Ⓑ
Ⓑ
258
257
W500
W501
256
265
255
not supplied
252
271
265
265

Ref. No.	Part No.	Description	Remark
251	1-467-649-81	SWITCH BLOCK, CONTROL (FK)	
252	1-651-891-11	FP-52 FLEXIBLE BOARD	
253	3-958-341-01	COVER, LS	
* 254	A-7066-361-A	DD-76P (SL) BOARD, COMPLETE	
* 255	A-7072-168-A	ZB-2 (SL) BOARD, COMPLETE	
* 256	A-7072-167-A	SL-38 (SL) BOARD, COMPLETE	
257	1-691-471-11	CONNECTOR, TRANSLATION 11P	
* 258	3-958-345-01	FRAME (U)	
* 259	A-7066-363-A	VS-123P (SL) BOARD, COMPLETE (AEP, UK)	
* 259	A-7085-022-A	VS-123P (SL, GA) BOARD, COMPLETE	(RUSSIA, E, AU)
* 260	A-7066-360-A	AU-182P BOARD, COMPLETE	
261	1-651-935-11	FP-95 FLEXIBLE BOARD	
* 262	A-7066-362-A	VC-159P (SL) BOARD, COMPLETE	
* 263	3-958-925-01	CASE (MAIN), SHIELD, DD	
* 264	3-958-926-01	CASE (LID), SHIELD, DD	
265	3-713-786-21	SCREW (M2X3)	
266	3-958-720-01	LID	
* 267	X-3943-976-1	SHIELD (MAIN) ASSY, RP	
* 268	3-958-924-01	CASE (LID), SHIELD, RP	
269	1-651-936-11	FP-96 FLEXIBLE BOARD	
* 270	3-958-667-01	FRAME (B)	
* 271	3-958-928-01	PLATE, SHIELD, RP	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	

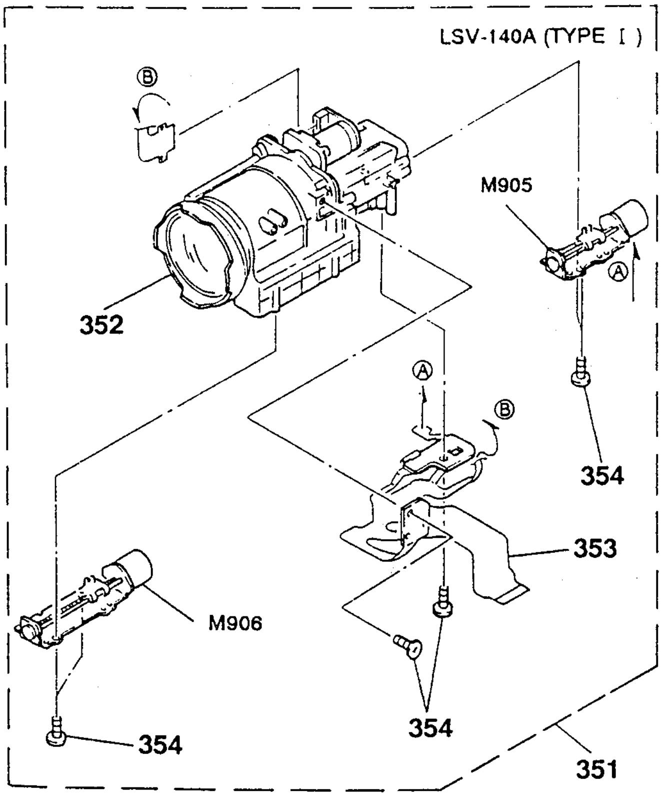
5-1-6. CCD BLOCK ASSEMBLY

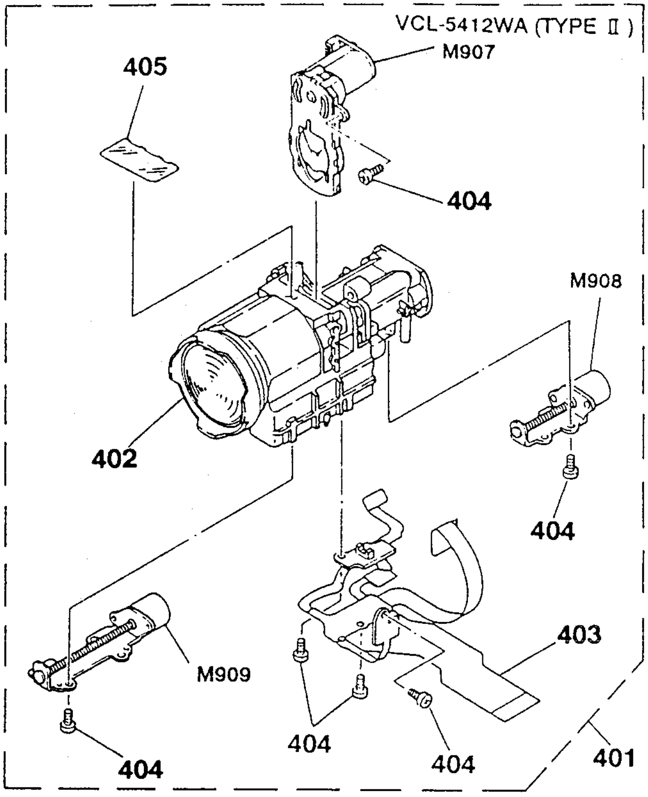


Be sure to read "Note on the CCD Imager replacement" on page 4–5 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
301	3-719-381-01	SCREW (M2X4)	
302	3-713-786-21	SCREW (M2X3)	
303	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
303	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
303	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
304	1-651-904-11	FP-97 FLEXIBLE BOARD	
* 305	3-958-333-01	FRAME (PJ)	
306	3-958-286-01	SHEET METAL, TRIPOD	
307	3-958-310-01	HOLDER, TRIPOD	
308	3-947-268-01	SCREW (P TIGHT)(2), TAPPING, +B	
* 309	X-3944-147-1	FRAME (L) ASSY	
310	3-948-339-01	SCREW, TAPPING	
* 311	A-7066-359-A	MA-230P BOARD, COMPLETE	
* 312	3-958-328-01	FRAME (MA)	
313	3-946-856-01	ADAPTOR (H), CCD FITTING	
314	1-547-558-21	FILTER BLOCK, OPTICAL	
315	3-946-857-01	RUBBER (S), SEAL	
* 316	A-7072-137-A	CD-137 (D) BOARD, COMPLETE	
317	1-500-226-11	BEAD, FERRAITE	
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER)	
J201	1-537-726-11	TERMINAL BOARD	

5-1-7. ZOOM LENS ASSEMBLIES (LSV-140A) (VCL-5412WA) (VCL-5412WB)


LSV-140A (TYPE I)
Ⓑ
M905
Ⓐ
352
Ⓐ
Ⓑ
354
353
M906
354
354
351


VCL-5412WA (TYPE II)
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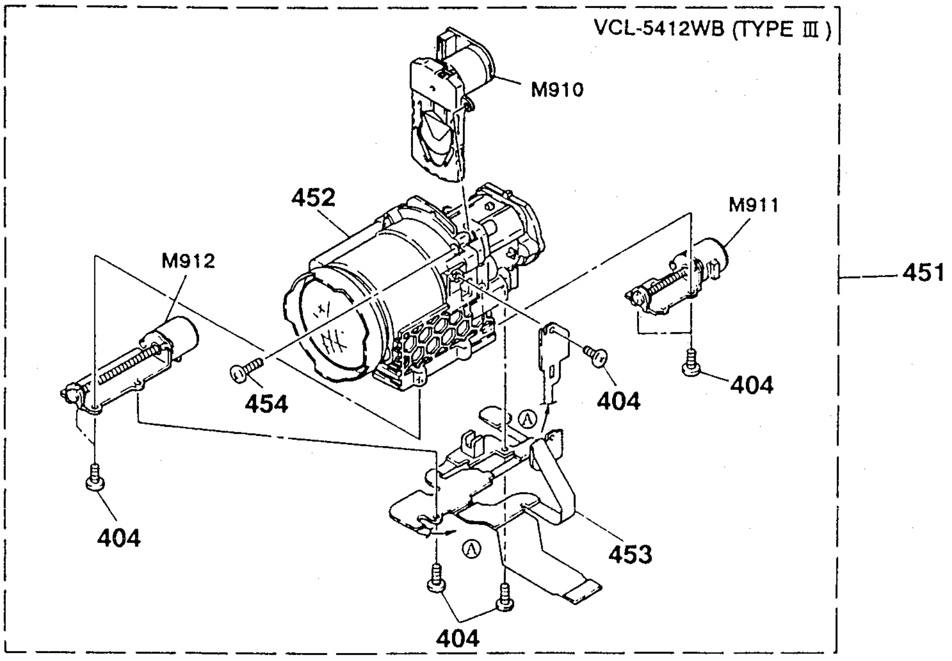
VCL-5412WB (TYPE III)
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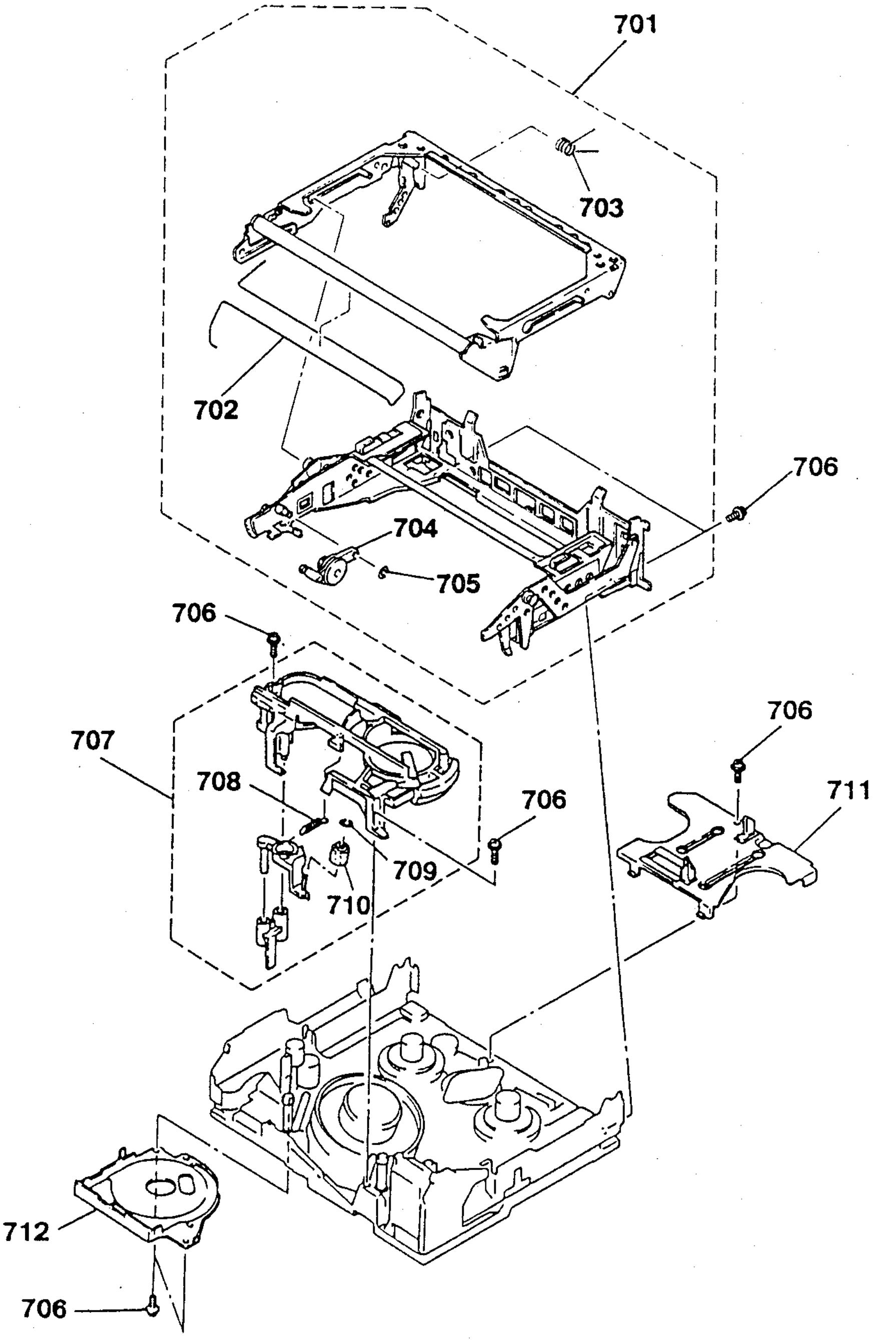
Ref. No.	Part No.	Description	Remark
351	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
352	A-4910-598-A	DEVICE ASSY, LSV-140A (RP)	
353	A-4915-338-A	FLEXIBLE MOUNT	
354	3-713-791-41	SCREW (M1.7X5), TAPPING, P2	
M905	1-698-364-01	MOTOR ASSY, FOCUS	
M906	1-698-363-01	MOTOR ASSY, ZOOM	
401	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
402	3-708-891-01	TUBE, MIRROR ASSY	
403	3-708-890-01	FLEXIBLE, MAIN	
404	3-708-302-01	SCREW (BT3 P1.7X4C)	
405	3-708-886-01	COVER, IG	
M907	3-708-888-01	METER, IG (IRIS)	
M908	3-708-889-01	MOTOR ASSY, FOCUS	
M909	3-708-887-01	MOTOR ASSY, ZOOM	
451	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
452	3-708-900-01	TUBE, MIRROR ASSY	
453	3-708-899-01	PC BOARD ASSY, FLEXIBLE	
454	3-708-617-01	SCREW (BT3 P1.7X7C)	
M910	3-708-898-01	IRIS ASSY	
M911	3-708-897-01	MOTOR ASSY, FOCUS	
M912	3-708-896-01	MOTOR ASSY, ZOOM	

5-1-8. CASSETTE COMPARTMENT ASSEMBLY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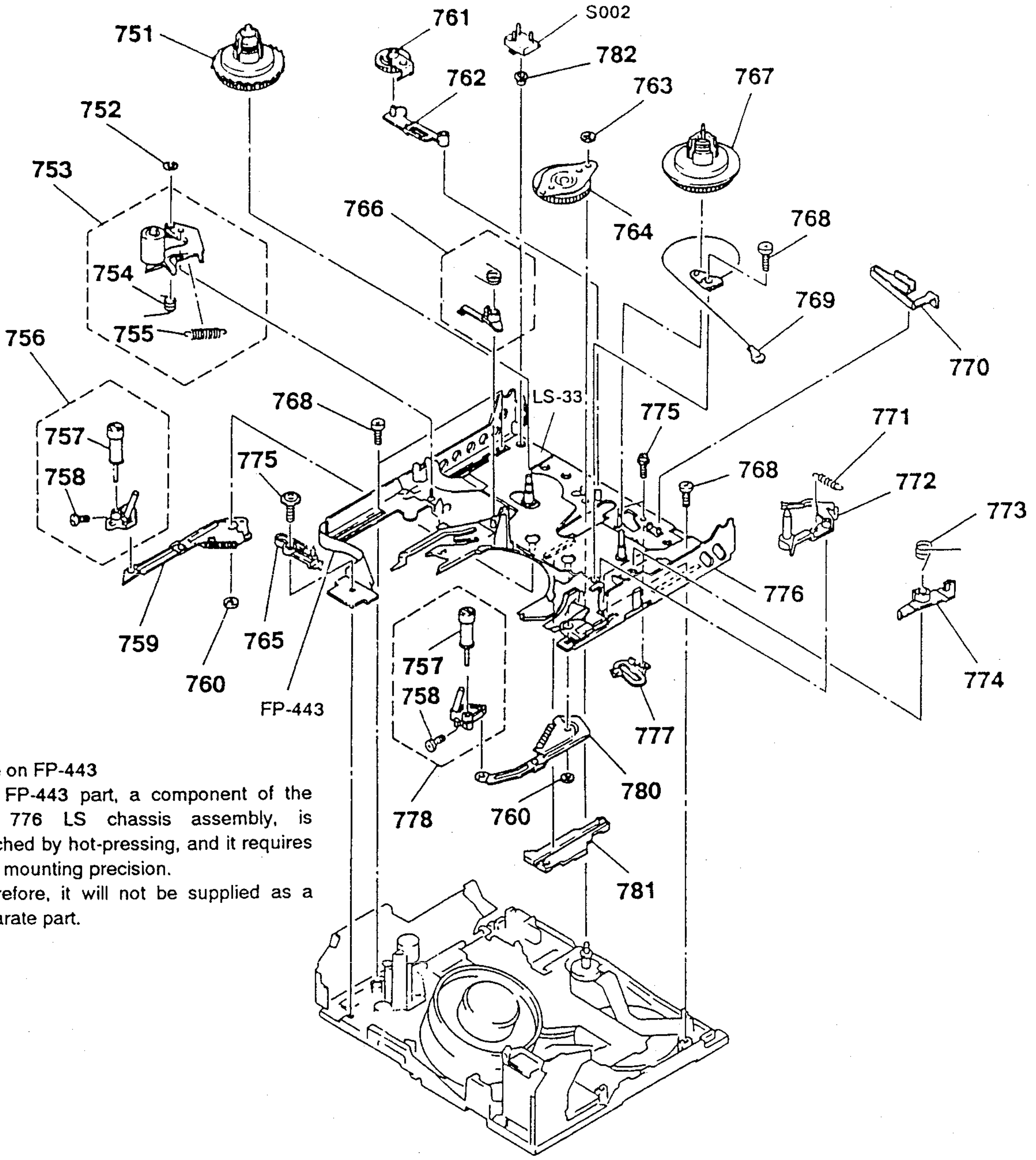
Ref. No.	Part No.	Description	Remark
701	A-7040-312-K	CASSETTE COMPARTMENT BLOCK ASSY	
702	3-945-773-01	BAR, TORSION	
703	3-945-771-01	SPRING, TORSION	
704	X-3941-287-2	DAMPER ASSY	
705	3-315-384-31	WASHER, STOPPER	
706	3-947-503-01	SCREW (M1.4X2.5)	
707	A-7040-309-A	PROTECT (BASE) BLOCK ASSY	
708	3-945-760-01	SPRING, TENSION	
709	3-321-393-01	WASHER, STOPPER	
710	X-3944-886-1	ROLLER ASSY, HC	
711	X-3941-280-1	RETAINER ASSY, GOOSENECK	
712	3-945-733-01	COVER, CAPSTAN	

5-1-9. LS CHASSIS ASSEMBLY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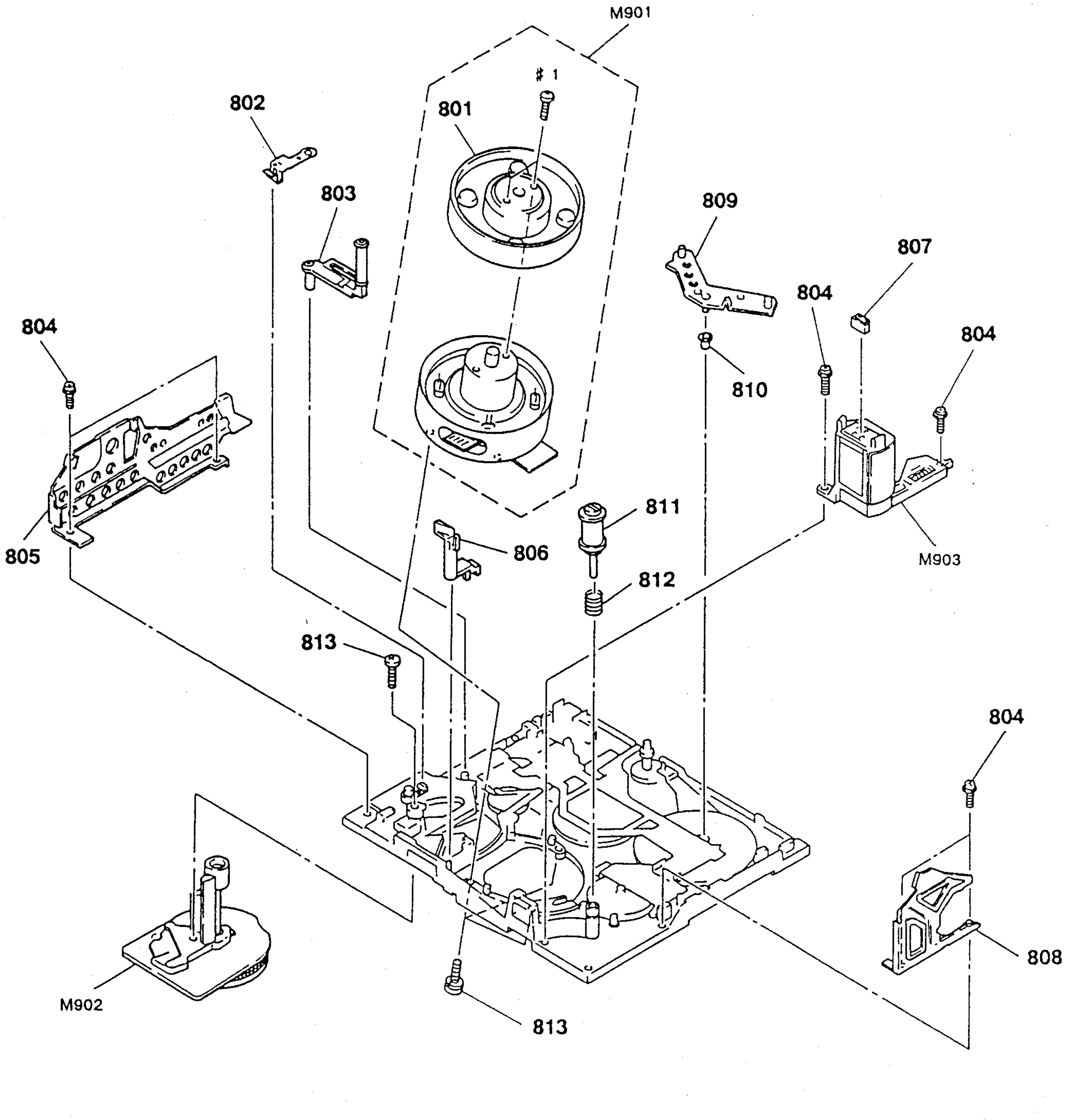
Note on FP-443
The FP-443 part, a component of the No. 776 LS chassis assembly, is attached by hot-pressing, and it requires high mounting precision.
Therefore, it will not be supplied as a separate part.

Ref. No.	Part No.	Description	Remark
751	X-3941-274-1	TABLE ASSY, REEL, T	
752	3-331-007-21	WASHER	
753	X-3941-271-5	ARM ASSY, PINCH	
754	3-945-743-01	SPRING, TORSION	
755	3-945-783-01	SPRING, TENSION	
756	A-7040-307-A	GUIDE (BASE)(T) BLOCK ASSY	
757	X-3941-756-1	ROLLER ASSY, TG6	
758	3-947-504-01	SCREW (M1.2X2)	
759	X-3941-267-1	ARM (T) ASSY, GUIDE	
760	3-669-465-01	WASHER (1.5), STOPPER	
761	X-3941-273-1	SOFT ASSY, T	
762	3-945-753-01	ARM, T SOFT	
763	3-726-829-01	WASHER, STOPPER	
764	X-3941-279-5	GEAR ASSY, GOOSENECK	
765	3-947-644-01	RETAINER, TG5 (BASE)	
766	A-7040-321-A	CLAW BLOCK ASSY, T HARD	
767	X-3944-116-1	TABLE ASSY, S REEL	
768	3-945-756-01	SCREW (M1.4X3)	
769	X-3941-277-1	STRING BLOCK ASSY	
770	3-945-801-01	BRAKE, S SOFT	
771	3-954-327-01	SPRING, TENSION	
772	X-3941-276-1	TG1 ASSY	
773	3-945-752-01	SPRING, TORSION	
774	3-945-799-01	BRAKE, S HARD	
775	3-947-503-01	SCREW (M1.4X2.5)	
776	X-3943-307-1	CHASSIS ASSY, LS	
777	3-945-784-01	PLATE, CAM, LS	
778	A-7040-323-A	GUIDE (BASE)(S) BLOCK ASSY	
780	X-3941-266-1	ARM (S) ASSY, GUIDE	
781	3-945-837-01	SLIDER, GL	
782	3-949-881-01	SLEEVE	
S002	1-572-987-11	SWITCH, PUSH (3 KEY)(TAPE SELECT)	

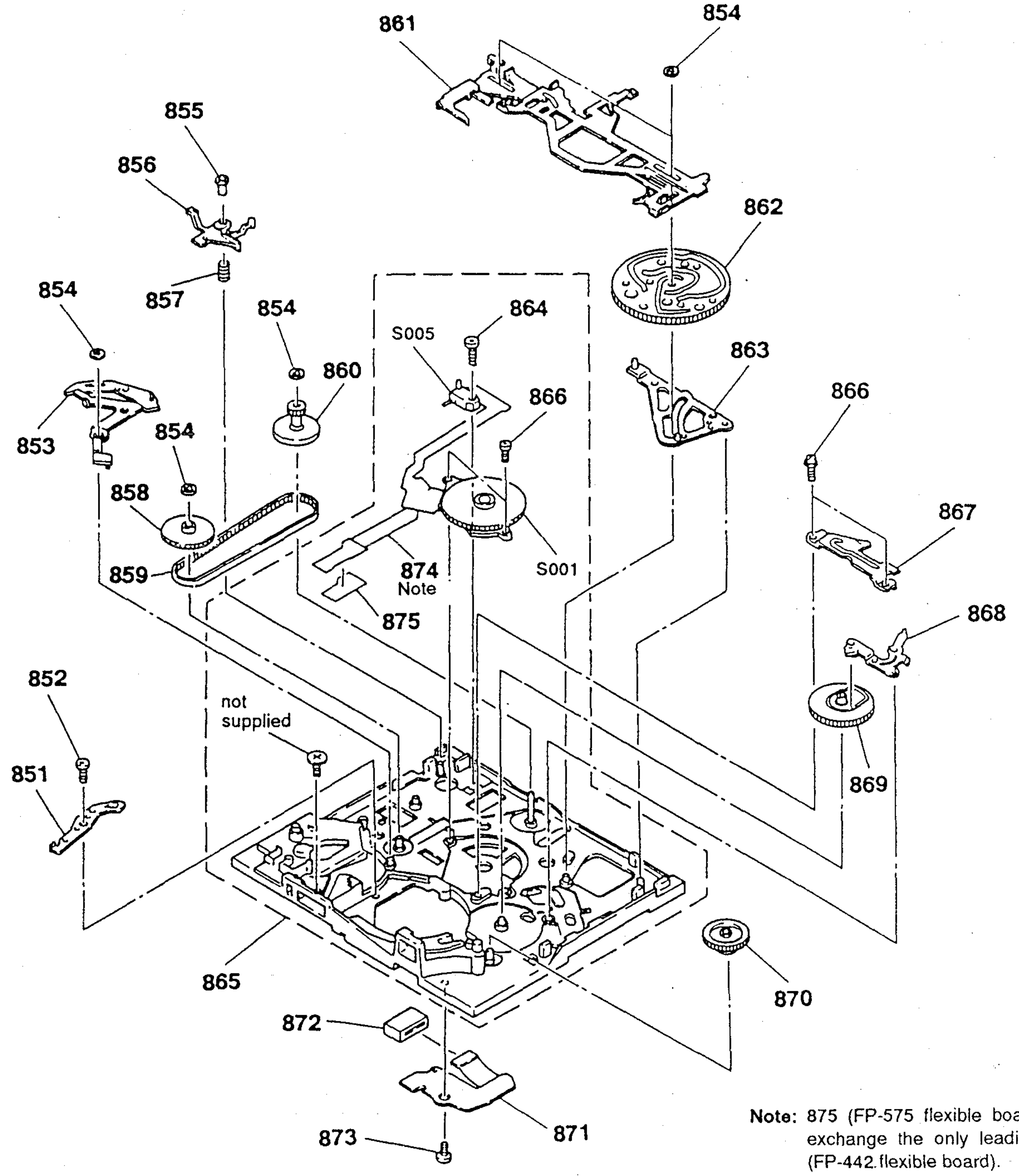
5-1-10. MECHANISM CHASSIS ASSEMBLY (1)



Ref. No.	Part No.	Description	Remark
801	A-7049-521-A	DRUM ASSY, UPPER (DGR-90-R)	
802	3-945-822-01	SPRING, LEAF, TG7 ARM	
803	A-7040-305-A	ARM BLOCK ASSY, TG7	
804	3-947-503-01	SCREW (M1.4X2.5)	
805	X-3941-255-1	PLATE (T) ASSY, SIDE	
806	3-945-735-01	ARM, HC CONVERSION	
807	1-568-323-11	CONNECTOR, BOARD TO BOARD 4P	
808	3-945-691-01	PLATE (S), SIDE	
809	3-945-701-01	ARM, LS	

Ref. No.	Part No.	Description	Remark
810	3-945-702-01	ROLLER, LS	
811	X-3942-193-1	ROLLER ASSY, TG2	
812	3-956-651-01	SPRING, COMPRESSION	
813	3-686-493-01	SCREW (M2X5), P1	
M901	A-7048-585-A	DRUM ASSY (DGH-90A-R)	
M902	8-835-477-12	MOTOR, DC SCE-0101A (CAPSTAN)	
M903	A-7040-304-A	MOTOR BLOCK ASSY, LM (LOADING)	

5-1-11. MECHANISM CHASSIS ASSEMBLY (2)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Note: 875 (FP-575 flexible board) is part that exchange the only leading part of 874 (FP-442.flexible board).

Ref. No.	Part No.	Description	Remark
851	3-945-734-01	ARM, HC DRIVING	
852	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
853	X-3941-259-1	ARM ASSY, PINCH PRESS	
854	3-726-829-01	WASHER, STOPPER	
855	3-945-730-01	SLEEVE, EJECT	
856	3-945-706-01	LEVER, EJECT	
857	3-945-729-01	SPRING, COMPRESSION	
858	X-3941-256-1	GEAR ASSY, CHANGE	
859	3-944-539-01	BELT, RELAY	
860	3-945-695-01	PULLEY, RELAY	
861	X-3941-260-1	SLIDER ASSY, M	
862	3-945-696-02	CAM	
863	X-3941-258-3	ARM ASSY, GL	
864	3-713-786-71	SCREW (M2X5)	
865	A-7040-303-A	CHASSIS ASSY, MECHANICAL	
866	3-947-503-01	SCREW (M1.4X2.5)	
867	3-945-722-01	RETAINER, GEAR	
868	X-3941-257-1	ARM ASSY, FF	
869	3-945-697-01	GEAR (B), L	
870	3-945-700-01	GEAR (A), L	
871	1-641-643-12	FP-444 FLEXIBLE BOARD	
872	1-691-254-13	CONNECTOR, TRANSLATION 10P	
873	3-945-756-01	SCREW (M1.4X3)	
874	1-641-639-13	FP-442 FLEXIBLE BOARD	
875	1-645-271-11	FP-575 FLEXIBLE BOARD	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S005	1-570-771-21	SWITCH (C DOWN)	

5-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable

- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH
- Australian model is abbreviated as AUS.

Ref. No.	Part No.	Description			Remark
	A-7066-360-A	AU-182P BOARD, COMPLETE			
		************************			
			(Ref. No. 3,000 Series)		
		< CAPACITOR >			
C402	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C403	1-164-222-11	CERAMIC CHIP	0.22uF		25V
C404	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C405	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C407	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C408	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C409	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C411	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C412	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C413	1-126-209-11	ELECT	100uF	20%	4V
C414	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C415	1-128-004-11	ELECT CHIP	10uF	20%	16V
C416	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
C419	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C421	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C422	1-216-864-11	METAL CHIP	0	5%	1/16W
C424	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C425	1-164-346-11	CERAMIC CHIP	1uF		16V
C426	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C427	1-128-004-11	ELECT CHIP	10uF	20%	16V
C428	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C429	1-128-013-11	ELECT CHIP	1uF	20%	50V
C430	1-128-004-11	ELECT CHIP	10uF	20%	16V
C431	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C433	1-164-346-11	CERAMIC CHIP	1uF		16V
C434	1-128-003-11	ELECT CHIP	22uF	20%	4V
C435	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C436	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C437	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C438	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C439	1-128-004-11	ELECT CHIP	10uF	20%	16V
C440	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C441	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C442	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C443	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
CN401	1-691-516-11	CONNECTOR, BOARD TO BOARD 24P			
CN402	1-691-487-21	CONNECTOR, FFC/FPC 8P			
		< IC >			
IC401	8-759-823-19	IC CXA1488RR			
		< COIL >			
L401	1-412-954-11	INDUCTOR 18uH			
		< TRANSISTOR >			
Q404	8-729-402-81	TRANSISTOR XN4501			
		< RESISTOR >			
R401	1-216-849-11	METAL CHIP	220K	5%	1/16W
R403	1-216-859-11	METAL GLAZE	1.5M	5%	1/16W
R404	1-216-851-11	METAL CHIP	330K	5%	1/16W
R406	1-216-833-11	METAL CHIP	10K	5%	1/16W
R407	1-216-837-11	METAL CHIP	22K	5%	1/16W
R411	1-216-833-11	METAL CHIP	10K	5%	1/16W
R412	1-216-821-11	METAL CHIP	1K	5%	1/16W
R415	1-216-849-11	METAL CHIP	220K	5%	1/16W
R416	1-216-864-11	METAL CHIP	0	5%	1/16W
R418	1-216-851-11	METAL CHIP	330K	5%	1/16W
R420	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R423	1-216-839-11	METAL CHIP	33K	5%	1/16W
R424	1-216-833-11	METAL CHIP	10K	5%	1/16W
R425	1-216-810-11	METAL CHIP	120	5%	1/16W
R429	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R430	1-216-841-11	METAL CHIP	47K	5%	1/16W
R431	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R432	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R433	1-216-817-11	METAL CHIP	470	5%	1/16W
R434	1-216-821-11	METAL CHIP	1K	5%	1/16W
R435	1-216-836-11	METAL CHIP	18K	5%	1/16W
R436	1-216-837-11	METAL CHIP	22K	5%	1/16W
R442	1-216-817-11	METAL CHIP	470	5%	1/16W

****

A-7072-137-A CD-137 D BOARD, COMPLETE
****
(Ref. No. 1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C691	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C692	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
C694	1-164-346-11	CERAMIC CHIP 1uF 16V	
C695	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C696	1-104-908-11	TANTAL. CHIP 47uF 20% 4V	

< IC >

Ref. No.	Part No.	Description	Remark
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER)	

< COIL >

Ref. No.	Part No.	Description	Remark
L691	1-412-963-11	INDUCTOR 100uH	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q691	8-729-232-86	TRANSISTOR 2SK1875-BL/V	
Q692	8-729-117-73	TRANSISTOR 2SC4178-F14	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R692	1-216-065-00	METAL CHIP 4.7K 5% 1/10W	
R693	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R694	1-216-045-00	METAL CHIP 680 5% 1/10W	
R695	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R696	1-216-809-11	METAL CHIP 100 5% 1/16W	
R697	1-216-073-00	METAL CHIP 10K 5% 1/10W	

****

A-7066-361-A DD-76P (SL) BOARD, COMPLETE
****
(Ref. No. 5,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C901	1-164-492-11	CERAMIC CHIP 0.15uF 10% 16V	
C902	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C903	1-163-121-00	CERAMIC CHIP 150PF 5% 50V	
C904	1-163-121-00	CERAMIC CHIP 150PF 5% 50V	
C906	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C907	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C908	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C909	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C910	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C911	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C912	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C913	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C914	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C915	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C917	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C918	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C920	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C921	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C923	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C924	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C925	1-164-506-11	CERAMIC CHIP 4.7uF 16V	
C926	1-164-337-11	CERAMIC CHIP 2.2uF 16V	
C927	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C928	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C929	1-135-216-11	TANTALUM CHIP 10uF 20% 10V	
C930	1-107-418-11	ELECT CHIP 10uF 20% 35V	
C931	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C932	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C934	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C936	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C938	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C939	1-163-023-00	CERAMIC CHIP 0.015uF 5% 50V	
C940	1-163-023-00	CERAMIC CHIP 0.015uF 5% 50V	
C941	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C942	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C943	1-163-019-00	CERAMIC CHIP 0.0068uF 10% 50V	
C944	1-164-161-11	CERAMIC CHIP 0.0022uF 10% 100V	
C945	1-128-530-11	ELECT CHIP 33uF 20% 10V	
C946	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C950	1-128-004-11	ELECT CHIP 10uF 20% 16V	

Be sure to read "Note on the CCD Imager replacement" on page 4-5 when changing the CCD imager.

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
CN901	1-695-324-11	CONNECTOR, BOARD TO BOARD 42P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D901	8-719-027-77	DIODE MA796-TX	
D909	8-719-404-49	DIODE MA111	
D910	8-719-404-49	DIODE MA111	

< IC >

Ref. No.	Part No.	Description	Remark
IC901	8-759-295-31	IC MB3799-03PFV-G-BND-ER	

< JACK >

Ref. No.	Part No.	Description	Remark
J901	1-537-281-11	TERMINAL BOARD (BATTERY TERMINAL)	
J902	1-565-276-21	JACK, ULTRA SMALL 1P (LANC)	
J903	1-568-027-11	JACK, SMALL TYPE 1P (🎧)	

< COIL >

Ref. No.	Part No.	Description	Remark
L901	1-424-653-11	COIL, CHOKE 10uH	
L902	1-424-653-11	COIL, CHOKE 10uH	
L903	1-424-653-11	COIL, CHOKE 10uH	
L904	1-409-556-11	COIL, CHOKE 47uH	
L905	1-424-674-11	COIL, CHOKE 22uH	
L906	1-409-556-11	COIL, CHOKE 47uH	
L907	1-424-674-11	COIL, CHOKE 22uH	

Ref. No.	Part No.	Description	Remark
L908	1-424-674-11	COIL, CHOKE 22uH	
L909	1-412-056-11	INDUCTOR CHIP 4.7uH	
L910	1-412-056-11	INDUCTOR CHIP 4.7uH	
L912	1-412-056-11	INDUCTOR CHIP 4.7uH	
L914	1-412-064-11	INDUCTOR CHIP 100uH	
L915	1-412-064-11	INDUCTOR CHIP 100uH	
L916	1-412-056-11	INDUCTOR CHIP 4.7uH	
L917	1-412-056-11	INDUCTOR CHIP 4.7uH	
L918	1-216-296-00	METAL CHIP 0 5% 1/8W	
L919	1-216-296-00	METAL CHIP 0 5% 1/8W	

< IC LINK >

Ref. No.	Part No.	Description	Remark
⚠PS450	1-533-284-11	LINK, CHIP IC SOC1600 1.6A	
⚠PS451	1-533-284-11	LINK, CHIP IC SOC1600 1.6A	
⚠PS452	1-533-284-11	LINK, CHIP IC SOC1600 1.6A	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q901	8-729-420-12	TRANSISTOR XN4213	
Q902	8-729-804-41	TRANSISTOR 2SB1122-S	
Q903	8-729-823-82	TRANSISTOR FP101	
Q904	8-729-823-84	TRANSISTOR FP102	
Q905	8-729-823-82	TRANSISTOR FP101	
Q906	8-729-823-82	TRANSISTOR FP101	
Q907	8-729-823-82	TRANSISTOR FP101	
Q909	8-729-805-25	TRANSISTOR 2SB1121	
Q914	8-729-402-42	TRANSISTOR UN5213	
Q915	8-729-402-42	TRANSISTOR UN5213	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R901	1-218-872-11	METAL CHIP 11K 0.50% 1/16W	
R902	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R903	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R904	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R905	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R906	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R907	1-216-035-00	METAL CHIP 270 5% 1/10W	
R908	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R909	1-216-031-00	METAL CHIP 180 5% 1/10W	
R910	1-216-029-00	METAL CHIP 150 5% 1/10W	
R911	1-216-029-00	METAL CHIP 150 5% 1/10W	
R912	1-216-029-00	METAL CHIP 150 5% 1/10W	
R913	1-216-041-00	METAL CHIP 470 5% 1/10W	
R916	1-216-864-11	METAL CHIP 0 5% 1/16W	
R917	1-216-864-11	METAL CHIP 0 5% 1/16W	
R918	1-216-819-11	METAL CHIP 680 5% 1/16W	
R919	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R920	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R922	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R924	1-216-864-11	METAL CHIP 0 5% 1/16W	
R925	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R927	1-216-864-11	METAL CHIP 0 5% 1/16W	
R928	1-216-852-11	METAL CHIP 390K 5% 1/16W	
R931	1-216-813-11	METAL CHIP 220 5% 1/16W	
R932	1-216-864-11	METAL CHIP 0 5% 1/16W	
R936	1-216-864-11	METAL CHIP 0 5% 1/16W	
R937	1-216-864-11	METAL CHIP 0 5% 1/16W	
R938	1-216-864-11	METAL CHIP 0 5% 1/16W	
R940	1-216-864-11	METAL CHIP 0 5% 1/16W	
R941	1-218-849-11	METAL CHIP 1.2K 0.50% 1/16W	
R944	1-216-864-11	METAL CHIP 0 5% 1/16W	
R945	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	

< TRANSFORMER >

Ref. No.	Part No.	Description	Remark
⚠T901	1-426-938-11	TRANSFORMER, DC/DC CONVERTER	

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LS-33 BOARD, COMPLETE
****
(Ref. No. 6,000 Series)

< DIODE >

Ref. No.	Part No.	Description	Remark
D001	8-719-989-52	DIODE GL4600S	

< HALL ELEMENT >

Ref. No.	Part No.	Description	Remark
H001	8-719-987-62	DIODE LT140SAZ	
H002	8-719-987-62	DIODE LT140SAZ	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q001	8-729-012-46	TRANSISTOR PT4600FS	
Q002	8-729-012-46	TRANSISTOR PT4600FS	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R003	1-216-033-00	METAL CHIP 220 5% 1/10W	
R004	1-216-033-00	METAL CHIP 220 5% 1/10W	
R010	1-216-033-00	METAL CHIP 220 5% 1/10W	
R011	1-216-033-00	METAL CHIP 220 5% 1/10W	

< SWITCH >

Ref. No.	Part No.	Description	Remark
S002	1-572-987-11	SWITCH, PUSH (3 KEY)(TAPE SELECT)	

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A-7066-359-A MA-230P BOARD, COMPLETE
****
(Ref. No. 3,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C014	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C015	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C032	1-164-346-11	CERAMIC CHIP 1uF 16V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description			Remark
C033	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C034	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C035	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C036	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C037	1-164-346-11	CERAMIC CHIP	1uF		16V
C040	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C041	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C044	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C045	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V

< CONNECTOR >

Ref.No.	Part No.	Description
* CN001	1-764-517-11	CONNECTOR, FFC/FPC (ZIF) 7P
* CN003	1-580-055-21	PIN, CONNECTOR 2P

< IC >

Ref.No.	Part No.	Description	
IC002	8-749-923-29	IC	RS-20E-T
IC003	8-759-822-37	IC	LA7293M-TE-L

< JACK >

Ref.No.	Part No.	Description
J001	1-568-027-11	JACK, SMALL TYPE 1P (MIC)

< COIL >

Ref.No.	Part No.	Description
L002	1-216-295-91	CONDCTOR, CHIP (2012)
L003	1-216-295-91	CONDCTOR, CHIP (2012)

< TRANSISTOR >

Ref.No.	Part No.	Description	
Q002	8-729-420-24	TRANSISTOR	2SB1218A-QRS

< RESISTOR >

Ref.No.	Part No.	Description			Remark
R028	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R029	1-216-821-11	METAL CHIP	1K	5%	1/16W
R030	1-216-833-11	METAL CHIP	10K	5%	1/16W
R031	1-216-838-11	METAL CHIP	27K	5%	1/16W
R032	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R033	1-216-838-11	METAL CHIP	27K	5%	1/16W
R044	1-216-853-11	METAL CHIP	470K	5%	1/16W
R045	1-216-834-11	METAL CHIP	12K	5%	1/16W

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A-7072-167-A SL-38 (SL) BOARD, COMPLETE

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(Ref. No. 3,000 Series)

< CAPACITOR >

Ref.No.	Part No.	Description			Remark
C543	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C544	1-163-059-91	CERAMIC CHIP	0.01uF	10%	50V
C545	1-163-059-91	CERAMIC CHIP	0.01uF	10%	50V
C546	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C547	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C551	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C553	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C554	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C555	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C556	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C557	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C558	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V

< CONNECTOR >

Ref.No.	Part No.	Description
CN500	1-691-473-21	CONNECTOR, FFC/FPC 7P
CN501	1-691-472-21	CONNECTOR, FFC/FPC 6P
CN502	1-691-482-21	CONNECTOR, FFC/FPC 15P

< IC >

Ref.No.	Part No.	Description	
IC507	8-759-165-47	IC	MPC1780VFUEB

< COIL >

Ref.No.	Part No.	Description
L505	1-216-295-91	CONDCTOR, CHIP (2012)

< TRANSISTOR >

Ref.No.	Part No.	Description	
Q560	8-729-805-25	TRANSISTOR	2SB1121
Q561	8-729-425-50	TRANSISTOR	2SB1462Q
Q562	8-729-402-81	TRANSISTOR	XN4501

< RESISTOR >

Ref.No.	Part No.	Description			Remark
R562	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R563	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R564	1-216-864-11	METAL CHIP	0	5%	1/16W
R565	1-216-833-11	METAL CHIP	10K	5%	1/16W
R566	1-218-857-11	METAL CHIP	2.7K	0.50%	1/16W
R567	1-216-295-91	CONDCTOR, CHIP (2012)			
R568	1-216-168-00	METAL GLAZE	56	5%	1/8W
R569	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R570	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R571	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R572	1-216-841-11	METAL CHIP	47K	5%	1/16W
R590	1-216-833-11	METAL CHIP	10K	5%	1/16W
R591	1-216-832-11	METAL CHIP	8.2K	5%	1/16W

< FLEXIBLE BOARD >

Ref.No.	Part No.	Description
W500	1-651-889-11	FP-48 FLEXIBLE BOARD
W501	1-642-186-11	FP-437 FLEXIBLE BOARD

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A-7066-362-A VC-159P (SL) BOARD, COMPLETE
****
(Ref. No. 2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C601	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C604	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C606	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C607	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C608	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C610	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C611	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C612	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C613	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C614	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C616	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C617	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C618	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C619	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C620	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C621	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C622	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C623	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C624	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C627	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C628	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C629	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C630	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C632	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C633	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C634	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C637	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C638	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C643	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C645	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C646	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C696	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C697	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C698	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C700	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C701	1-163-059-91	CERAMIC CHIP	0.01uF	10%	50V
C702	1-162-638-11	CERAMIC CHIP	1uF		16V
C703	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C704	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C705	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C706	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C708	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C709	1-163-077-91	CERAMIC CHIP	0.1uF		50V
C710	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C711	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C712	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C713	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C715	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C716	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C717	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C718	1-162-637-11	CERAMIC CHIP	0.47uF		16V
C719	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C721	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C725	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C726	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C727	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C728	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C729	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C730	1-164-298-11	CERAMIC CHIP	0.15uF	10%	25V
C731	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C732	1-162-638-11	CERAMIC CHIP	1uF		16V
C733	1-162-638-11	CERAMIC CHIP	1uF		16V
C734	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C735	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C739	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C742	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C743	1-162-638-11	CERAMIC CHIP	1uF		16V
C745	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C746	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C747	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C748	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C750	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C751	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C752	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C753	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C754	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C755	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C756	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C757	1-162-974-11	CERAMIC CHIP	0.01uF		50V

< CONNECTOR >

Ref. No.	Part No.	Description
* CN601	1-764-395-21	CONNECTOR, BOARD TO BOARD 42P
* CN701	1-573-356-11	CONNECTOR, FFC/FPC 16P
CN751	1-573-361-11	CONNECTOR, FFC/FPC 21P

< TRIMMER >

Ref. No.	Part No.	Description
CT701	1-141-356-11	CAP, ADJ

< DIODE >

Ref. No.	Part No.	Description	
D701	8-719-404-49	DIODE	MA111
D702	8-719-404-49	DIODE	MA111
D703	8-719-404-49	DIODE	MA111
D705	8-719-404-49	DIODE	MA111

Ref. No.	Part No.	Description	Remark
		< FILTER >	
FL601	1-239-766-11	FILTER, LOW PASS	
		< IC >	
IC601	8-759-278-57	IC AK6420HF-E2	
IC602	8-759-337-57	IC SC424611-MC68HC11MA8FU	
IC603	8-759-064-36	IC MB88346BPFV	
IC604	8-759-710-29	IC NJM2235M	
IC609	8-752-369-23	IC CXD2150AR-T6	
IC610	8-752-365-72	IC CXD2151R-T6	
IC611	8-759-262-36	IC CXD2133BR-T6	
IC614	8-759-255-09	IC uPD6461GS-802-GLG-E2	
IC701	8-752-355-07	IC CXD1267N-T4	
IC702	8-752-365-74	IC CXD1266R-T4	
IC703	8-752-069-21	IC CXA1690Q-T4	
IC704	8-759-070-51	IC SN74HCU04ADB	
IC705	8-752-375-12	IC CXD2407BR-T4	
IC751	8-759-701-24	IC NJM3414M	
IC752	8-759-058-50	IC XRA10324AF-E2	
IC753	8-752-365-65	IC CXD2126N-T4	
IC754	8-759-247-07	IC MPC17A34VMEL	
IC755	8-759-031-58	IC SC7SU04F	
		< COIL >	
L601	1-412-058-11	INDUCTOR CHIP 10uH	
L604	1-414-078-11	INDUCTOR 10uH	
L605	1-410-389-31	INDUCTOR CHIP 47uH	
L608	1-412-006-31	INDUCTOR CHIP 10uH	
L704	1-412-058-11	INDUCTOR CHIP 10uH	
L751	1-412-062-11	INDUCTOR CHIP 47uH	
		< TRANSISTOR >	
Q604	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q605	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q606	8-729-602-21	TRANSISTOR 2SC4154	
Q607	8-729-602-21	TRANSISTOR 2SC4154	
Q701	8-729-403-27	TRANSISTOR XN4401	
Q751	8-729-602-21	TRANSISTOR 2SC4154	
Q752	8-729-013-88	TRANSISTOR RN1302-TE85L	
		< RESISTOR >	
R601	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R602	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R603	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R604	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R606	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R607	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R608	1-216-864-11	METAL CHIP 0 5% 1/16W	
R609	1-216-838-11	METAL CHIP 27K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R610	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R611	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R612	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R613	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R617	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R619	1-216-803-11	METAL CHIP 33 5% 1/16W	
R620	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R621	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R623	1-216-863-11	METAL GLAZE 3.3M 5% 1/16W	
R624	1-216-864-11	METAL CHIP 0 5% 1/16W	
R625	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R626	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R627	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R628	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R629	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R630	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R631	1-216-864-11	METAL CHIP 0 5% 1/16W	
R634	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R635	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R636	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R637	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R638	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R640	1-216-815-11	METAL CHIP 330 5% 1/16W	
R642	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R643	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R645	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R646	1-216-818-11	METAL CHIP 560 5% 1/16W	
R647	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R648	1-216-818-11	METAL CHIP 560 5% 1/16W	
R649	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R650	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R651	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R652	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R653	1-216-864-11	METAL CHIP 0 5% 1/16W	
R656	1-216-864-11	METAL CHIP 0 5% 1/16W	
R658	1-216-864-11	METAL CHIP 0 5% 1/16W	
R659	1-216-817-11	METAL CHIP 470 5% 1/16W	
R661	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R662	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R663	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R664	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R665	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R666	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R667	1-216-820-11	METAL CHIP 820 5% 1/16W	
R668	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R669	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R670	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R671	1-216-296-00	METAL CHIP 0 5% 1/8W	
R701	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R702	1-216-833-11	METAL CHIP 10K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
R703	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R705	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R708	1-216-864-11	METAL CHIP 0 5% 1/16W	
R709	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R710	1-216-864-11	METAL CHIP 0 5% 1/16W	
R712	1-216-864-11	METAL CHIP 0 5% 1/16W	
R713	1-216-807-11	METAL CHIP 68 5% 1/16W	
R714	1-216-864-11	METAL CHIP 0 5% 1/16W	
R716	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R718	1-216-864-11	METAL CHIP 0 5% 1/16W	
R719	1-218-876-11	METAL CHIP 16K 0.50% 1/16W	
R720	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R724	1-216-864-11	METAL CHIP 0 5% 1/16W	
R725	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R728	1-216-864-11	METAL CHIP 0 5% 1/16W	
R729	1-216-864-11	METAL CHIP 0 5% 1/16W	
R731	1-216-864-11	METAL CHIP 0 5% 1/16W	
R741	1-218-855-11	METAL CHIP 2.2K 0.50% 1/16W	
R742	1-218-865-11	METAL CHIP 5.6K 0.50% 1/16W	
R743	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R744	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R745	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R746	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R747	1-216-820-11	METAL CHIP 820 5% 1/16W	
R748	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R749	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R750	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R751	1-216-809-11	METAL CHIP 100 5% 1/16W	
R752	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R753	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R754	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R755	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R756	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R757	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R758	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R759	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R760	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R761	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R762	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R764	1-216-828-11	METAL CHIP 3.9K 5% 1/16W	
R798	1-216-296-00	METAL CHIP 0 5% 1/8W	
R799	1-216-296-00	METAL CHIP 0 5% 1/8W	

< VIBRATOR >

Ref. No.	Part No.	Description	Remark
X601	1-760-081-21	VIBRATOR, CERAMIC (24MHz)	
X701	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)	

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A-7066-194-A VF-44P BOARD, COMPLETE

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(Ref. No. 4,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description	Remark
C501	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	
C502	1-126-176-11	ELECT 220uF 20% 10V	
C503	1-163-077-91	CERAMIC CHIP 0.1uF 50V	
C504	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
⚠C505	1-162-625-11	CERAMIC CHIP 0.0047uF 5% 50V	
⚠C506	1-164-758-11	CERAMIC CHIP 0.0039uF 5% 50V	
C508	1-127-515-11	ELECT(SOLID) 47uF 20% 6.3V	
C509	1-126-090-11	ELECT 82uF 20% 10V	
C510	1-164-611-11	CERAMIC CHIP 0.001uF 10% 500V	
C511	1-124-257-00	ELECT 2.2uF 20% 50V	
C512	1-163-037-11	CERAMIC CHIP 0.022uF 10% 25V	
C513	1-137-306-11	FILM CHIP 0.1uF 5% 16V	
C514	1-162-638-11	CERAMIC CHIP 1uF 16V	
C515	1-131-381-00	TANTALUM 47uF 10% 10V	
C516	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	
C517	1-135-091-91	TANTAL. CHIP 1uF 20% 16V	

< CONNECTOR >

Ref. No.	Part No.	Description	Remark
* CN502	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
* CN503	1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	

< DIODE >

Ref. No.	Part No.	Description	Remark
D501	8-719-024-87	DIODE LN1261CAL (TALLY)	
D502	8-719-024-87	DIODE LN1261CAL (TALLY)	
D503	8-719-400-20	DIODE MA152WA	

< IC >

Ref. No.	Part No.	Description	Remark
IC501	8-759-196-14	IC BA7149F-E2	

< COIL >

Ref. No.	Part No.	Description	Remark
L501	1-412-031-11	INDUCTOR CHIP 47uH	
L502	1-410-385-11	INDUCTOR CHIP 22uH	
⚠L503	1-459-876-41	COIL, FERRITE (HLC)	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remark
Q501	8-729-216-31	TRANSISTOR 2SA1163-G	
Q503	8-729-106-68	TRANSISTOR 2SD1615A-GP	

< RESISTOR >

Ref. No.	Part No.	Description	Remark
R501	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R502	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	
R503	1-216-063-00	METAL CHIP 3.9K 5% 1/10W	
R504	1-216-041-00	METAL CHIP 470 5% 1/10W	
R505	1-216-041-00	METAL CHIP 470 5% 1/10W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
R508	1-216-005-00	METAL CHIP 15 5% 1/10W	
R509	1-216-870-11	METAL CHIP 180K 1% 1/10W	
R510	1-216-077-00	METAL CHIP 15K 5% 1/10W	
R511	1-216-129-00	METAL CHIP 2.2M 5% 1/10W	
R512	1-216-133-00	METAL CHIP 3.3M 5% 1/10W	
R513	1-216-125-00	METAL CHIP 1.5M 5% 1/10W	
R514	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R515	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
R516	1-216-025-91	METAL GLAZE 100 5% 1/10W	
R517	1-216-308-00	METAL CHIP 4.7 5% 1/10W	
R518	1-208-814-11	METAL CHIP 22K 0.50% 1/10W	
R519	1-218-754-11	METAL CHIP 120K 0.50% 1/10W	
R520	1-216-121-00	METAL CHIP 1M 5% 1/10W	
R521	1-216-160-00	METAL GLAZE 27 5% 1/8W	
R522	1-216-073-00	METAL CHIP 10K 5% 1/10W	
R523	1-216-111-00	METAL CHIP 390K 5% 1/10W	
R524	1-216-097-00	METAL CHIP 100K 5% 1/10W	
R525	1-216-031-00	METAL CHIP 180 5% 1/10W	
R526	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	
R528	1-216-077-00	METAL CHIP 15K 5% 1/10W	
		< VARIABLE RESISTOR >	
RV501	1-238-088-11	RES, ADJ, CERMET 2.2K	
RV501	1-238-854-11	RES, ADJ, CERMET 2.2K	
RV501	1-241-592-11	RES, ADJ, METAL GRAZE 2.2K	
RV502	1-223-565-11	RES, VAR, CARBON (4 TYPE)	
RV503	1-238-096-11	RES, ADJ CERMET 1M	
RV503	1-238-862-11	RES, ADJ, CERMET 1M	
RV503	1-241-600-11	RES, ADJ, METAL GRAZE 1M	
RV505	1-238-086-11	RES, ADJ, CERMET 470	
RV505	1-238-852-11	RES, ADJ, CERMET 470	
RV505	1-241-590-11	RES, ADJ, METAL GRAZE 470	
		< TRANSFORMER >	
⚠T501	1-439-525-11	TRANSFORMER ASSY, FLYBACK	
		< THERMISTOR >	
TH501	1-809-350-21	THERMISTOR, NTC (2125)	
		< SOCKET >	
⚠W502	1-526-978-51	SOCKET ASSY, CRT	

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A-7066-363-A VS-123P (SL) BOARD, COMPLETE (AEP, UK)
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A-7085-022-A VS-123P (SL, GA) BOARD, COMPLETE
(E, AUS, RUSSIA)
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(Ref. No. 10,000 Series)

Ref. No.	Part No.	Description	Remark
		< CAPACITOR >	
C101	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C102	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	
C106	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C107	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C108	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C109	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C110	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C111	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C112	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C113	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C114	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C115	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C116	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C117	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C118	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C119	1-162-961-11	CERAMIC CHIP 330PF 10% 50V	
C120	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C121	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C122	1-162-961-11	CERAMIC CHIP 330PF 10% 50V	
C123	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C124	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C128	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C131	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C134	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C135	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C136	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C137	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C143	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C145	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C146	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
C147	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C148	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C149	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C150	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C151	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C152	1-162-974-11	CERAMIC CHIP 0.01uF 50V	
C154	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C156	1-162-910-11	CERAMIC CHIP 5PF 0.25PF 50V	
C157	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	
C158	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C159	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	
C160	1-162-946-11	CERAMIC CHIP 27PF 5% 50V	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C161	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C163	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C164	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C165	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C166	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C167	1-164-382-11	CERAMIC CHIP	91PF	5%	50V
C168	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C169	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C172	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C179	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C190	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C204	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C205	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C206	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C207	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C208	1-128-007-11	ELECT CHIP	2.2uF	20%	35V
C209	1-126-246-11	ELECT CHIP	220uF	20%	4V
C210	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C211	1-128-013-11	ELECT CHIP	1uF	20%	50V
C212	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C213	1-135-176-21	TANTALUM CHIP	0.68uF	10%	20V
C214	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C215	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C216	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C217	1-128-013-11	ELECT CHIP	1uF	20%	50V
C218	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C219	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C220	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C222	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C227	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C228	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C229	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C230	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C231	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C232	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C234	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C235	1-126-207-11	ELECT CHIP	33uF	20%	4V
C238	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C239	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C240	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C241	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C242	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C243	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C244	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C245	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C246	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C247	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C251	1-162-954-11	CERAMIC CHIP	120PF	5%	50V
C258	1-164-346-11	CERAMIC CHIP	1uF		16V
C262	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C263	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C264	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C268	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C271	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C273	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C274	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C275	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C276	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C278	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C279	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C281	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C282	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C283	1-162-956-11	CERAMIC CHIP	180PF	5%	50V
C284	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C285	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C286	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C287	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C288	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C289	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C290	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C291	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C299	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C301	1-128-004-11	ELECT CHIP	10uF	20%	16V
C304	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C305	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C306	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C307	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C310	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C311	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C312	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C319	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C320	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C328	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C331	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C500	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C501	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C502	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C503	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C504	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C506	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C507	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V
C508	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C509	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C510	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C511	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C512	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C513	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C514	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C515	1-162-974-11	CERAMIC CHIP	0.01uF		50V

Ref.No.	Part No.	Description			Remark
C516	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C518	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C519	1-164-346-11	CERAMIC CHIP	1uF		16V
C521	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C522	1-164-361-11	CERAMIC CHIP	0.047uF		16V
C523	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C524	1-164-492-11	CERAMIC CHIP	0.15uF	10%	16V
C525	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C526	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C527	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C528	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C529	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C530	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C531	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C532	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C533	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C534	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C535	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C536	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C537	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C539	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C540	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C541	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C543	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C544	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C545	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C546	1-164-346-11	CERAMIC CHIP	1uF		16V
C547	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C548	1-128-004-11	ELECT CHIP	10uF	20%	16V
C550	1-128-530-11	ELECT CHIP	33uF	20%	10V
C559	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C560	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C561	1-128-004-11	ELECT CHIP	10uF	20%	16V
C562	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C563	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C564	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C565	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C566	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C567	1-164-173-11	CERAMIC CHIP	0.0039uF	10%	50V
C568	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C569	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C570	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C571	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C573	1-162-909-11	CERAMIC CHIP	4PF	0.25PF	50V
C951	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C955	1-164-360-11	CERAMIC CHIP	0.1uF		16V
C967	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C1506	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C1508	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1509	1-164-383-11	CERAMIC CHIP	110PF	5%	50V

Ref.No.	Part No.	Description			Remark
C1510	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C1511	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C1512	1-128-006-11	ELECT CHIP	4.7uF	20%	25V
C1513	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C1514	1-128-013-11	ELECT CHIP	1uF	20%	50V
C1515	1-164-145-11	CERAMIC CHIP	390PF	5%	50V
C1516	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1521	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
		< CONNECTOR >			
CN101	1-691-492-21	CONNECTOR, FFC/FPC 13P			
CN102	1-580-789-21	PIN, CONNECTOR (SMD) 6P			
CN201	1-766-343-21	CONNECTOR, FFC/FPC 13P			
CN202	1-691-536-11	CONNECTOR, BOARD TO BOARD 24P			
* CN203	1-764-396-21	CONNECTOR, BOARD TO BOARD 42P			
CN206	1-580-789-21	PIN, CONNECTOR (SMD) 6P			
CN502	1-764-708-11	CONNECTOR, FFC/FPC (LIF) 9P			
CN503	1-764-717-11	CONNECTOR, FFC/FPC (LIF) 18P			
CN504	1-695-325-11	CONNECTOR, BOARD TO BOARD 42P			
* CN505	1-764-397-21	CONNECTOR, BOARD TO BOARD 42P			
		< DIODE >			
D101	8-719-800-76	DIODE	1SS226		
D102	8-719-404-49	DIODE	MA111		
D201	8-719-027-50	DIODE	MA142WK-(TX)		
D204	8-719-027-50	DIODE	MA142WK-(TX)		
D212	8-719-404-49	DIODE	MA111		
D214	8-719-027-50	DIODE	MA142WK-(TX)		
D218	8-719-800-76	DIODE	1SS226		
D321	8-719-045-87	DIODE	MA4Z082WA-TX		
⚠D501	8-719-421-27	DIODE	MA728		
D504	8-719-404-49	DIODE	MA111		
D505	8-719-404-49	DIODE	MA111		
		< FILTER >			
FL201	1-236-848-21	FILTER, LOW PASS			
FL202	1-239-055-21	FILTER, LOW PASS (CCD.PAL.Y)			
		< IC >			
IC102	8-752-069-78	IC	CXA1704R-T4		
IC201	8-752-071-22	IC	CXA1700R-T6		
IC203	8-752-351-95	IC	CXL1506N-T4		
IC205	8-752-053-21	IC	CXA1211M		
IC206	8-759-261-32	IC	M52358VP-610D		
IC501	8-759-278-57	IC	AK6420HF-E2		
IC502	8-759-295-62	IC	S-8423DFS-T2		
IC503	8-759-267-67	IC	MB89098PFV-G-107-BND		
IC505	8-752-851-37	IC	CXP87132-009R		
IC506	8-759-169-11	IC	CXA1575M-E2		
IC508	8-759-195-09	IC	XR1083CQ-E2		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
IC951	8-759-169-02	IC MB88344BPFV-G-BND-ER	
		< COIL >	
L103	1-412-066-21	INDUCTOR CHIP 220uH	
L104	1-412-951-11	INDUCTOR 10uH	
L105	1-412-066-21	INDUCTOR CHIP 220uH	
L108	1-412-060-11	INDUCTOR CHIP 22uH	
L109	1-412-957-11	INDUCTOR 33uH	
L110	1-410-657-21	INDUCTOR CHIP 180uH	
L111	1-412-950-11	INDUCTOR 8.2uH	
L112	1-412-280-31	INDUCTOR 330uH	
L113	1-412-957-11	INDUCTOR 33uH	
L114	1-412-282-41	INDUCTOR 470uH	
L115	1-412-280-31	INDUCTOR 330uH	
L116	1-410-657-21	INDUCTOR CHIP 180uH	
L118	1-410-655-31	INDUCTOR CHIP 120uH	
L120	1-412-951-11	INDUCTOR 10uH	
L204	1-412-963-11	INDUCTOR 100uH	
L207	1-412-945-11	INDUCTOR 3.3uH	
L209	1-412-960-21	INDUCTOR 56uH	
L212	1-412-947-11	INDUCTOR 4.7uH	
L213	1-412-953-11	INDUCTOR 15uH	
L214	1-412-960-21	INDUCTOR 56uH	
L503	1-412-961-11	INDUCTOR 68uH	
		< IC LINK >	
⚠PS500	1-576-122-21	LINK, IC 2E10 0.4A	
⚠PS501	1-576-122-21	LINK, IC 2E10 0.4A	
		< TRANSISTOR >	
Q101	8-729-905-23	TRANSISTOR 2SA1576-R	
Q102	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q103	8-729-216-22	TRANSISTOR 2SA1162	
Q104	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q105	8-729-402-42	TRANSISTOR UN5213	
Q106	8-729-402-42	TRANSISTOR UN5213	
Q109	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q111	8-729-015-74	TRANSISTOR UN5111-TX	
Q112	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q113	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q114	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q115	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q117	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q119	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q126	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q127	8-729-402-42	TRANSISTOR UN5213	
Q129	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q131	8-729-015-74	TRANSISTOR UN5111-TX	
Q132	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q133	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	

Ref. No.	Part No.	Description	Remark
Q134	8-729-402-48	TRANSISTOR UN521E-TX	
Q135	8-729-402-48	TRANSISTOR UN521E-TX	
Q202	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q204	8-729-402-42	TRANSISTOR UN5213	
Q211	8-729-420-20	TRANSISTOR XN4312	
Q216	8-729-402-42	TRANSISTOR UN5213	
Q217	8-729-420-12	TRANSISTOR XN4213	
Q219	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q225	8-729-015-76	TRANSISTOR UN5211-TX	
Q232	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q234	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q235	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q236	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q237	8-729-402-81	TRANSISTOR XN4501	
Q238	8-729-420-50	TRANSISTOR UN5215	
Q240	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q241	8-729-420-50	TRANSISTOR UN5215	
Q242	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q244	8-729-402-42	TRANSISTOR UN5213	
Q246	8-729-402-81	TRANSISTOR XN4501	
Q247	8-729-402-42	TRANSISTOR UN5213	
Q248	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q249	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q252	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q253	8-729-420-56	TRANSISTOR UN511E	
Q254	8-729-403-35	TRANSISTOR UN5113	
Q255	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q256	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q257	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q258	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q259	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q260	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q261	8-729-402-42	TRANSISTOR UN5213	
Q262	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q263	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q264	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q266	8-729-402-42	TRANSISTOR UN5213	
Q267	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q268	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q501	8-729-403-27	TRANSISTOR XN4401	
Q503	8-729-402-81	TRANSISTOR XN4501	
Q504	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q506	8-729-402-42	TRANSISTOR UN5213	
Q507	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q511	8-729-420-20	TRANSISTOR XN4312	
Q951	8-729-101-07	TRANSISTOR 2SB798-DL	
Q952	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q954	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q956	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q958	8-729-230-63	TRANSISTOR 2SC4116-YG	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description				Remark
Q1506	8-729-402-42	TRANSISTOR	UN5213			
Q1507	8-729-403-35	TRANSISTOR	UN5113			
		< RESISTOR >				
R101	1-216-864-11	METAL CHIP	0	5%	1/16W	
R102	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R103	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R104	1-216-819-11	METAL CHIP	680	5%	1/16W	
R105	1-216-819-11	METAL CHIP	680	5%	1/16W	
R106	1-216-814-11	METAL CHIP	270	5%	1/16W	
R107	1-216-813-11	METAL CHIP	220	5%	1/16W	
R108	1-216-800-11	METAL GLAZE	18	5%	1/16W	
R109	1-216-805-11	METAL CHIP	47	5%	1/16W	
R110	1-216-818-11	METAL CHIP	560	5%	1/16W	
R111	1-218-875-11	METAL CHIP	15K	0.50%	1/16W	
R112	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R114	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R117	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R118	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R119	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R120	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R122	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R123	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R124	1-216-864-11	METAL CHIP	0	5%	1/16W	
R126	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R127	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R128	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R129	1-809-357-21	THERMISTOR, NTC (2125)				
R130	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R131	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R132	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R133	1-216-819-11	METAL CHIP	680	5%	1/16W	
R134	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R135	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R136	1-216-820-11	METAL CHIP	820	5%	1/16W	
R137	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R140	1-216-813-11	METAL CHIP	220	5%	1/16W	
R141	1-216-817-11	METAL CHIP	470	5%	1/16W	
R142	1-216-818-11	METAL CHIP	560	5%	1/16W	
R143	1-216-808-11	METAL CHIP	82	5%	1/16W	
R144	1-216-818-11	METAL CHIP	560	5%	1/16W	
R146	1-216-809-11	METAL CHIP	100	5%	1/16W	
R147	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R148	1-216-813-11	METAL CHIP	220	5%	1/16W	
R149	1-216-813-11	METAL CHIP	220	5%	1/16W	
R150	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R151	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R152	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R153	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R154	1-216-821-11	METAL CHIP	1K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R158	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R159	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R160	1-216-818-11	METAL CHIP	560	5%	1/16W	
R162	1-216-818-11	METAL CHIP	560	5%	1/16W	
R163	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R164	1-216-804-11	METAL CHIP	39	5%	1/16W	
R165	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R166	1-216-816-11	METAL CHIP	390	5%	1/16W	
R171	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	
R173	1-216-864-11	METAL CHIP	0	5%	1/16W	
R174	1-216-864-11	METAL CHIP	0	5%	1/16W	
R175	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R178	1-216-809-11	METAL CHIP	100	5%	1/16W	
R179	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R180	1-216-809-11	METAL CHIP	100	5%	1/16W	
R181	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R185	1-216-847-11	METAL CHIP	150K	5%	1/16W	
R186	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R187	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R188	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R189	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R193	1-216-815-11	METAL CHIP	330	5%	1/16W	
R194	1-216-818-11	METAL CHIP	560	5%	1/16W	
R195	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R196	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R197	1-216-864-11	METAL CHIP	0	5%	1/16W	
R201	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R202	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R203	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R204	1-216-864-11	METAL CHIP	0	5%	1/16W	
R205	1-216-864-11	METAL CHIP	0	5%	1/16W	
R207	1-216-804-11	METAL CHIP	39	5%	1/16W	
R209	1-216-814-11	METAL CHIP	270	5%	1/16W	
R210	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R211	1-216-803-11	METAL CHIP	33	5%	1/16W	
R212	1-216-864-11	METAL CHIP	0	5%	1/16W	
R213	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R214	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	
R215	1-216-819-11	METAL CHIP	680	5%	1/16W	
R216	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R218	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R219	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R221	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R223	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R224	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R226	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R228	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R230	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R231	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R232	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	

VS-123P

Ref.No.	Part No.	Description				Remark
R233	1-216-809-11	METAL CHIP	100	5%	1/16W	
R234	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R235	1-218-877-11	METAL CHIP	18K	0.50%	1/16W	
R236	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R241	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R245	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R246	1-216-819-11	METAL CHIP	680	5%	1/16W	
R247	1-216-815-11	METAL CHIP	330	5%	1/16W	
R253	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W	
R255	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R256	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R259	1-218-859-11	METAL CHIP	3.3K	0.50%	1/16W	
R261	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R263	1-218-839-11	METAL GLAZE	470	0.50%	1/16W	
R265	1-216-818-11	METAL CHIP	560	5%	1/16W	
R272	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R273	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R274	1-216-864-11	METAL CHIP	0	5%	1/16W	
R279	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R283	1-216-864-11	METAL CHIP	0	5%	1/16W	
R284	1-216-295-91	CONDCTOR, CHIP (2012)				
R285	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R286	1-216-815-11	METAL CHIP	330	5%	1/16W	
R288	1-216-844-11	METAL CHIP	82K	5%	1/16W	
R289	1-216-810-11	METAL CHIP	120	5%	1/16W	
R291	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R292	1-216-864-11	METAL CHIP	0	5%	1/16W	
R296	1-216-815-11	METAL CHIP	330	5%	1/16W	
R297	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R300	1-216-817-11	METAL CHIP	470	5%	1/16W	
R302	1-216-864-11	METAL CHIP	0	5%	1/16W	
R303	1-216-812-11	METAL CHIP	180	5%	1/16W	
R304	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R305	1-216-820-11	METAL CHIP	820	5%	1/16W	
R307	1-216-813-11	METAL CHIP	220	5%	1/16W	
R308	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R309	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R311	1-216-864-11	METAL CHIP	0	5%	1/16W	
R312	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R313	1-216-817-11	METAL CHIP	470	5%	1/16W	
R315	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R316	1-216-815-11	METAL CHIP	330	5%	1/16W	
R317	1-216-820-11	METAL CHIP	820	5%	1/16W	
R318	1-216-820-11	METAL CHIP	820	5%	1/16W	
R319	1-216-818-11	METAL CHIP	560	5%	1/16W	
R321	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R322	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R323	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R324	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R325	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R328	1-216-820-11	METAL CHIP	820	5%	1/16W	
R331	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R332	1-216-864-11	METAL CHIP	0	5%	1/16W	
R333	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R334	1-216-815-11	METAL CHIP	330	5%	1/16W	
R338	1-216-813-11	METAL CHIP	220	5%	1/16W	
R339	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R342	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R347	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R348	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R349	1-216-864-11	METAL CHIP	0	5%	1/16W	
R354	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R355	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R356	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R357	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R358	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R359	1-216-817-11	METAL CHIP	470	5%	1/16W	
R360	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R361	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R362	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R363	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R366	1-216-864-11	METAL CHIP	0	5%	1/16W	
R368	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R373	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R380	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R381	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R383	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R387	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R395	1-216-864-11	METAL CHIP	0	5%	1/16W	
R398	1-216-820-11	METAL CHIP	820	5%	1/16W	
R399	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R501	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R502	1-216-295-91	CONDCTOR, CHIP (2012)				
R503	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R505	1-216-864-11	METAL CHIP	0	5%	1/16W	
R506	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R507	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R508	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R509	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R510	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R511	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R512	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R513	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R514	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R515	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R516	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R517	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R518	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R519	1-216-817-11	METAL CHIP	470	5%	1/16W	
R520	1-216-845-11	METAL CHIP	100K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R522	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R523	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R525	1-216-856-11	METAL CHIP	820K	5%	1/16W	
R526	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R527	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R528	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R529	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R530	1-216-019-00	METAL CHIP	56	5%	1/10W	
R531	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R532	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R533	1-217-671-11	METAL CHIP	1	5%	1/10W	
R534	1-217-671-11	METAL CHIP	1	5%	1/10W	
R535	1-217-671-11	METAL CHIP	1	5%	1/10W	
R536	1-217-671-11	METAL CHIP	1	5%	1/10W	
R537	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R538	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R539	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R540	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R541	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R542	1-216-864-11	METAL CHIP	0	5%	1/16W	
R543	1-216-864-11	METAL CHIP	0	5%	1/16W	
R544	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R546	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R548	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R549	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R552	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R553	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R555	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R556	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R558	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R560	1-216-296-00	METAL CHIP	0	5%	1/8W	
R561	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R562	1-216-851-11	METAL CHIP	330K	5%	1/16W	
R563	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R565	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R566	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R567	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R569	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R570	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R572	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R573	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R577	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R578	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R579	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R580	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R581	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R582	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R583	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R584	1-216-864-11	METAL CHIP	0	5%	1/16W	
R585	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R586	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R587	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R588	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R589	1-216-864-11	METAL CHIP	0	5%	1/16W	
R590	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R591	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R592	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R593	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R594	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R595	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R596	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R597	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R599	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R951	1-216-864-11	METAL CHIP	0	5%	1/16W	
R952	1-216-864-11	METAL CHIP	0	5%	1/16W	
R954	1-216-138-00	METAL CHIP	3.3	5%	1/8W	
R955	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R956	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R957	1-216-820-11	METAL CHIP	820	5%	1/16W	
R960	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R966	1-216-864-11	METAL CHIP	0	5%	1/16W	
R989	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R990	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R991	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R992	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R993	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R994	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R995	1-216-817-11	METAL CHIP	470	5%	1/16W	
R996	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1400	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1401	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1403	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R1404	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R1406	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1408	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R1412	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1413	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1414	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1415	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1508	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R1510	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1515	1-216-864-11	METAL CHIP	0	5%	1/16W	
R1516	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R1519	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R1521	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R1524	1-218-894-11	METAL CHIP	91K	0.50%	1/16W	
R1525	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R1526	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R1536	1-216-864-11	METAL CHIP	0	5%	1/16W	

Ref. No.	Part No.	Description	Remark
		< COMPOSITION CIRCUIT BLOCK >	
RB502	1-236-971-11	NETWORK, RES 0	
RB503	1-236-432-11	NETWORK, RES 47K	
RB504	1-236-412-11	NETWORK, RES 1.0K	
RB505	1-236-412-11	NETWORK, RES 1.0K	
RB506	1-236-412-11	NETWORK, RES 1.0K	
RB510	1-236-412-11	NETWORK, RES 1.0K	
RB512	1-236-412-11	NETWORK, RES 1.0K	
RB513	1-236-971-11	NETWORK, RES 0	
RB515	1-236-904-11	NETWORK, RES 1K	
RB516	1-236-904-11	NETWORK, RES 1K	
RB518	1-236-971-11	NETWORK, RES 0	
RB519	1-236-971-11	NETWORK, RES 0	
RB520	1-236-904-11	NETWORK, RES 10K	
RB523	1-236-432-11	NETWORK, RES 47K	
RB524	1-236-908-11	NETWORK, RES 10K	
RB525	1-236-424-11	NETWORK, RES 10K	
RB526	1-236-908-11	NETWORK, RES 10K	
RB527	1-236-424-11	NETWORK, RES 10K	
RB528	1-236-424-11	NETWORK, RES 10K	
RB529	1-236-424-11	NETWORK, RES 10K	
RB530	1-236-424-11	NETWORK, RES 10K	
RB531	1-236-424-11	NETWORK, RES 10K	
RB532	1-236-424-11	NETWORK, RES 10K	
RB535	1-236-908-11	NETWORK, RES 10K	
RB536	1-236-412-11	NETWORK, RES 1.0K	
RB537	1-236-412-11	NETWORK, RES 1.0K	
RB542	1-236-412-11	NETWORK, RES 1.0K	
RB543	1-236-412-11	NETWORK, RES 1.0K	
RB544	1-236-412-11	NETWORK, RES 1.0K	
RB549	1-236-971-11	NETWORK, RES 0	
RB550	1-236-971-11	NETWORK, RES 0	
RB552	1-236-412-11	NETWORK, RES 1.0K	
RB554	1-236-971-11	NETWORK, RES 0	
		< VARIABLE RESISTOR >	
RV202	1-238-086-11	RES, ADJ, CERMET 470	
RV202	1-238-852-11	RES, ADJ, CERMET 470	
		< VIBRATOR >	
X201	1-579-366-11	VIBRATOR, CRYSTAL (4.43MHz)	
X501	1-579-049-21	VIBRATOR, CRYSTAL (32kHz)	
X502	1-760-315-11	VIBRATOR, CRYSTAL (11.719MHz)	
XTL501	1-579-369-21	VIBRATOR (10MHz)	

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Ref. No.	Part No.	Description	Remark
*	A-7072-168-A	ZB-2 (SL) BOARD, COMPLETE ************************* (Ref. No. 3,000 Series)	
		< CONNECTOR >	
CN101	1-691-483-21	CONNECTOR, FFC/FPC 4P	
		< BATTERY HOLDER >	
LI101	1-550-104-11	HOLDER, BATTERY	

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Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS *************	
105	1-467-648-22	SWITCH BLOCK, CONTROL (CK)	
⚠158	1-452-566-11	CRT ASSY (M01KKX07WB10)	
251	1-467-649-81	SWITCH BLOCK, CONTROL (FK)	
252	1-651-891-11	FP-52 FLEXIBLE BOARD	
257	1-691-471-11	CONNECTOR, TRANSLATION 11P	
261	1-651-935-11	FP-95 FLEXIBLE BOARD	
269	1-651-936-11	FP-96 FLEXIBLE BOARD	
303	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
303	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
303	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
304	1-651-904-11	FP-97 FLEXIBLE BOARD	
314	1-547-558-21	FILTER BLOCK, OPTICAL	
317	1-500-226-11	BEAD, FERRAITE	
351	8-848-704-01	DEVICE, LENS LSV-140A (TYPE I)	
401	1-547-716-11	LENS, ZOOM (VCL-5412WA)(TYPE II)	
451	1-547-739-11	LENS, ZOOM (VCL-5412WB)(TYPE III)	
IC691	A-7030-369-A	CCD BLOCK ASSY (055 SERVICE)(CCD IMAGER)	
J201	1-537-726-11	TERMINAL BOARD	
M001	1-542-259-11	MICROPHONE, CAP	
M905	1-698-364-01	MOTOR ASSY, FOCUS	
M906	1-698-363-01	MOTOR ASSY, ZOOM	
M907	3-708-888-01	METER, IG (IRIS)	
M908	3-708-889-01	MOTOR ASSY, FOCUS	
M909	3-708-887-01	MOTOR ASSY, ZOOM	
M910	3-708-898-01	IRIS ASSY	
M911	3-708-897-01	MOTOR ASSY, FOCUS	
M912	3-708-896-01	MOTOR ASSY, ZOOM	
S001	1-572-986-11	SWITCH, ROTARY (ENCODER)	
S002	1-572-987-11	SWITCH, PUSH (3 KEY)(TAPE SELECT)	
S005	1-570-771-21	SWITCH (C DOWN)	
W500	1-651-889-11	FP-48 FLEXIBLE BOARD	
W501	1-642-186-11	FP-437 FLEXIBLE BOARD	
W502	1-526-978-51	SOCKET ASSY, CRT	

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
		ACCESSORIES & PACKING MATERIALS ********************************	
	1-467-574-21	REMOTE COMMANDER (RMT-708) (AEP, UK, RUSSIA)	
*	3-962-863-51	INDIVIDUAL, CARTON (FX280EU)	
	3-712-673-01	SCREWDRIVER (FX280EU)	
	3-798-592-11	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (AEP, UK)	
	3-798-592-41	MANUAL, INSTRUCTION (GERMAN, ITALIAN) (AEP)	
	3-798-592-51	MANUAL, INSTRUCTION (FRENCH, DUTCH) (AEP)	
	3-798-592-61	MANUAL, INSTRUCTION (SWEDISH, PORTUGUESE) (AEP)	
	3-798-592-71	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (RUSSIA)	
	3-798-650-51	MANUAL, INSTRUCTION (ENGLISH, SPANISH) (FX280E:E, AUS)	
	3-798-650-61	MANUAL, INSTRUCTION (FRENCH, GERMAN) (FX280E:E)	
	3-798-650-71	MANUAL, INSTRUCTION (ARABIC) (FX280E:E)	
	3-798-650-81	MANUAL, INSTRUCTION (CHINESE) (FX280E:E)	
	3-798-651-41	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (FX280EU)	
	3-798-651-51	MANUAL, INSTRUCTION (ARABIC, PERSIAN) (FX280EU)	
	3-798-651-61	MANUAL, INSTRUCTION (CHINESE) (FX280EU)	
	3-958-131-01	LID, BATTERY CASE (for RMT-708) (AEP, UK, RUSSIA)	
*	3-958-571-01	CUSHION, LOWER	
*	3-962-863-31	INDIVIDUAL CARTON (AEP, UK)	
*	3-962-863-41	INDIVIDUAL CARTON (FX280E:E, AUS)	
*	3-962-863-61	INDIVIDUAL CARTON (RUSSIA)	
**	AC-V25/25B/25C	AC POWER ADAPTOR	
***	NP-55	BATTERY PACK	
****	RFU-99E		

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.
**** RF UNIT (RFU-99E) (FX280EU)

****

****

HARDWARE LIST

****

Ref. No.	Part No.	Description	Remark
#1	7-627-553-47	PRECISION SCREW +P 2X4 TYPE 3	

SECTION 6

INTERFACES • IC PIN FUNCTIONS

6-1. CAMERA CONTROL MICRO PROCESSOR PIN FUNCTION (VC-159 BOARD IC602: SC424614 MC68HC11MA8FU)

Pin No.	Signal Name	I/O	Function
1	VTR SO	I	Serial data input from mode control microprocessor (VS board IC503).
2	$\overline{\text{VTR SCK}}$	I	Serial data transfer clock from/to mode control microprocessor.
3	$\overline{\text{CAM CS}}$	I	Chip select signal from mode control microprocessor.
4			Not used.
5			
6			
7			
8			
9	PBV	I	V sync signal from servo/mechanism control microprocessor (VS board IC505).
10			Not used (connected to +3.6V).
11			
12	VDD		+3.6V power supply.
13	VSS		GND
14	$\overline{\text{CS TG}}$	O	Chip select signal to timing generator (IC702).
15			Not used (connected to +3.6V).
16	START	O	Operation signal of IC705. Normally "L". "H" during operation.
17	WEN	I	Write enable signal from timing generator (IC702). Normally "H".
18			Not used.
19			
20	$\overline{\text{CS CORE}}$	O	Chip select signal to camera core (IC609).
21	EEPROM BUSY	I	BUSY signal from EEPROM (IC601). Normally "H". "L" during data read/write.
22			Not used.
23	IRIS PWM	O	Iris control signal.
24			Not used.
25			
26	$\overline{\text{TESTX}}$	O	Test signal of IC705. "H": Camera mode, "L": Test/VTR mode.
27	LENS RST LED	O	Lens reset sensor LED ON/OFF. "H": ON, "L": OFF.
28	FC RST	I	Lens focus reset sensor signal input.
29	ZM RST	I	Lens zoom reset sensor signal input.
30	XIRQ		Connected to +3.6V.
31	VDD		+3.6V power supply.
32	VSS		GND
33			Not used.
34			
35			
36	$\overline{\text{CAM SCK}}$	O	Serial data transfer clock.
37	CAM SO	O	Serial data output.
38	CAM SI	I	Serial data input.
39			Not used.
40			
41	VDD		+3.6V power supply.
42	GENERAL A/D	I	Camera core (IC609) discrimination signal input.
43	LENS TYPE	I	Lens type discrimination signal input.
44	ZOOM SW	I	Zoom key signal input. When not pressed: 1.8V, TELE 1: 2.7V, TELE 2: 3.6V, WIDE 1: 0.9V, WIDE 2: 0V.
45			Not used.
46			
47			Not used. Connected to GND.
48			
49	HALL A/D	I	Hall voltage. Approx. 1V (iris opened) to approx. 3.5V (iris closed).
50	VRL	I	Connected to GND.
51	VRH	I	Connected to +3.6V.
52	VSS		GND
53	$\overline{\text{CS EEPROM}}$	O	Chip select signal to EEPROM (IC601).
54	$\overline{\text{CS CAM OPD}}$	O	Chip select signal to OPD (IC611).
55	D/A STB	O	Strobe signal to camera EVR (IC603).
56	EEPROM RESET	O	EEPROM (IC601) write disable signal. Normally "H".
57	$\overline{\text{CS AF OPD}}$	O	Chip select signal to AF OPD (IC611).
58	$\overline{\text{CS PDR}}$	O	Chip select signal to pre-driver (IC753).
59	$\overline{\text{CAM ON}}$	O	A/D converter (IC704) ON/OFF signal. Normally "H".
60	$\overline{\text{NTSC}}$	O	"L": NTSC, "H": PAL.
61	IRQ	I	Connected to +3.6V.
62			Not used.
63			
64	$\overline{\text{PDR RST}}$	O	Reset signal to zoom/focus pre-driver (IC753). "H": Camera mode, "L": VTR mode.
65	$\overline{\text{NRML}}$/VST	O	"H": Steady shot operation, "L": Normal operation.
66	$\overline{\text{VST/CORE RST}}$	O	Reset signal to camera core (IC609). Normally "H". "L": Reset.
67	$\overline{\text{OPD RST}}$	O	Reset signal to IC611 and IC705. "H": Camera mode, "L": VTR mode.
68			Not used. Connected to GND.
69			
70	VSS		GND
71	VDD		+3.6V power supply.
72			Not used.
73	EXTAL	I	24 MHz clock oscillation circuit.
74	XTAL	O	
75	$\overline{\text{RESET}}$	I	Reset signal from mode control microprocessor (VS board IC503). Normally "H". "L": Reset.
76	MODB		Connected to +3.6V.
77	MODA		Connected to GND.
78	RXD		Not used.
79	TXD		
80	VTR SO	O	Serial data output to mode control microprocessor (VS board IC503).

6-2. CAMERA CORE PIN FUNCTION
(VC-159 BOARD IC609: CXD2150R-T6)

Pin No.	Signal Name	I/O	Function	
1	OPD6	O	OPD (IC611) data output.	
2	OPD5	O	OPD data output.	
3	OPD4	O	OPD data output.	
4	OPD3	O	OPD data output.	
5	OPD2	O	OPD data output.	
6	OPD1	O	OPD data output.	
7	OPD0	O	OPD data output, LSB.	
8	OPDID	O	OPD line discrimination signal.	
9	VDD	–	Power supply (+3.6V).	
10	CO3	O	Not used.	
11	CO2	O		
12	CO1	O		
13	CO0	O		
14	VSS	–	GND	
15	CI3	I	Not used.	
16	CI2	I		
17	CI1	I		
18	CI0	I		
19	NRB	O	C signal. Color discrimination signal.	
20	VDD	–	+3.6V power supply.	
21	VBC		Connected to GND via 0.1 μF capacitor.	Chroma signal D/A converter interface.
22	AVSC		GND	
23	IREFC		Connected to GND via 12 kΩ resistor.	
24	VREFC	I	Full scale output value setting voltage.	
25	VGC		Connected to +3.6V power supply via 0.1 μF capacitor.	
26	AVDC		+3.6V power supply.	
27	IOC	O	Chroma signal output (Current output).	
28	VDD	–	Y I/F power supply (+3.6V).	
29	DICK	O	Not used.	
30	CDIS	O		
31	YO7	O		
32	YO6	O		
33	YO5	O		
34	YO4	O		
35	YO3	O		
36	YO2	O		
37	YO1	O		
38	YO0	O		
39	DATS	I	DA test pin. (Normally fixed at "L".)	
40	YI7	I	Not used.	
41	YI6	I	Not used.	
42	YI5	I		
43	YI4	I		
44	YI3	I		
45	YI2	I		
46	YI1	I		
47	YI0	I		
48	VSS	–	GND	
49	IOY	O	Y signal output (current output).	Y signal D/A converter interface.
50	AVDY		+3.6V power supply.	
51	VGY		Connected to +3.6V power supply via 0.1 μF capacitor.	
52	VRFY	I	Full scale output value setting voltage.	
53	IRFY		Connected to GND via 12 kΩ resistor.	
54	AVSY		GND	
55	VBY		Connected to GND via 0.1 μF capacitor.	
56	VDD	–	+3.6V power supply	
57	BIN	I	Not used.	
58	GIN	I	Not used.	
59	RIN	I	Not used.	
60	TIKEY	I	Not used.	
61	WKEY	I	Wide ID signal input.	
62	VCK	I	PAL 4 fsc modulation clock.	
63	VHLD	I	Mosaic processing vertical hold control signal.	
64	HHLD	I	Mosaic processing horizontal hold control signal.	
65	CSYN	I	Sync signal (SYNC) input.	
66	LALT	I	PAL line modulation inverted signal input.	
67	CBK	I	Blanking signal (CBLK) input.	
68	BF	I	Burst added signal input.	
69	HD	I	Horizontal sync signal (HD) input.	
70	VD	I	Vertical sync signal (VD) input.	
71	AJST	I	Data sampling pulse input.	
72	VDD	–	+3.6V power supply.	
73	SCK	I	Serial interface clock input from camera microprocessor (IC602).	
74	SI	I	Serial interface data input from camera microprocessor.	
75	XCE	I	Serial interface enable input from camera microprocessor.	
76	SO	O	Serial interface data output to camera microprocessor.	
77	VSS	–	GND	
78	CLK	I	Clock input.	
79	DEF	I	Defect compensation position pulse.	
80	ID	I	Color line discrimination signal.	

Pin No.	Signal Name	I/O	Function
81	MCK	I	Main clock input.
82	VDD	–	+3.6V power supply.
83	XCLR	I	All clear input.
84	VDD	–	AD I/F power supply (+3.6V).
85	ADCK	O	AD converter clock output. Not used.
86	VSS	–	GND
87	AD0	I	AD data input from A/D converter (IC704), MSB.
88	AD1	I	AD data input from A/D converter.
89	AD2	I	AD data input from A/D converter.
90	AD3	I	AD data input from A/D converter.
91	AD4	I	AD data input from A/D converter.
92	AD5	I	AD data input from A/D converter.
93	AD6	I	AD data input from A/D converter.
94	AD7	I	AD data input from A/D converter.
95	AD8	I	AD data input from A/D converter.
96	AD9	I	AD data input from A/D converter, LSB.
97	VDD	–	+3.6V power supply.
98	OPD9	O	OPD (IC611) data output, MSB.
99	OPD8	O	OPD data output.
100	OPD7	O	OPD data output.

6-3. MECHANISM CONTROL MICRO PROCESSOR PIN FUNCTION
(VS-123 BOARD IC505: CXP87132-009R)

<table>
<tr><th>Pin No.</th><th>Signal Name</th><th>I/O</th><th>Function</th></tr>
<tr><td>1</td><td>RP PB MODE</td><td>O</td><td>REC/PB switching signal of REC/PB amplifier (VS board IC102) and ATF servo IC (VS board IC508).
"H": PB.</td></tr>
<tr><td>2</td><td>$\overline{\text{FE ON}}$</td><td>O</td><td>Flying erase oscillation on/off control signal. "L": Oscillation.</td></tr>
<tr><td>3</td><td>JOG VD</td><td>O</td><td>False VD signal inserted in playback video signal during variable speed playback.</td></tr>
<tr><td>4</td><td>JOG</td><td>O</td><td>Variable speed playback/normal playback switching signal of video circuit.
"H": Variable speed playback.</td></tr>
<tr><td>5</td><td>$\overline{\text{S JACK IN}}$</td><td>I</td><td></td></tr>
<tr><td>6</td><td>$\overline{\text{PB 1.7M DET}}$</td><td>I</td><td rowspan="2">Not used.</td></tr>
<tr><td>7</td><td>JACK MON/$\overline{\text{ST}}$ DET</td><td>I</td></tr>
<tr><td>8</td><td>INT VD</td><td>O</td><td>Internal VD signal.</td></tr>
<tr><td>9</td><td>SYSTEM SYNC (PBV)</td><td>O</td><td>System synchronizing signal.</td></tr>
<tr><td>10</td><td>$\overline{\text{SYNC DET}}$</td><td>O</td><td>Sync detect output. "L" when sync is detect.</td></tr>
<tr><td>11</td><td>E/$\overline{\text{L}}$ DET</td><td>I</td><td rowspan="2">Not used.</td></tr>
<tr><td>12</td><td>$\overline{\text{MIC MONO}}$</td><td>I</td></tr>
<tr><td>13</td><td>MODE SW 0</td><td>I</td><td rowspan="3">Mode switch input.
<table>
<tr><th></th><th>BL</th><th>END</th><th>EJECT</th><th>USE</th><th>LOAD</th><th>READY</th><th>TURN</th><th>REC/PB</th><th>FF</th></tr>
<tr><td>M SW 0</td><td>H</td><td>L</td><td>L</td><td>H</td><td>L</td><td>H</td><td>H</td><td>L</td><td>L</td></tr>
<tr><td>M SW 1</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td><td>H</td><td>H</td><td>L</td></tr>
<tr><td>M SW 2</td><td>H</td><td>H</td><td>H</td><td>H</td><td>H</td><td>L</td><td>L</td><td>L</td><td>L</td></tr>
</table></td></tr>
<tr><td>14</td><td>MODE SW 1</td><td>I</td></tr>
<tr><td>15</td><td>MODE SW 2</td><td>I</td></tr>
<tr><td>16</td><td>$\overline{\text{CC DOWN SW}}$</td><td>I</td><td>Cassette compartment down switch input. "L": down</td></tr>
<tr><td>17</td><td>REC PROOF SW</td><td>I</td><td>Recording-proof switch input. "H": REC prohibition.</td></tr>
<tr><td>18</td><td>ME/$\overline{\text{MP}}$ SW</td><td>I</td><td>ME/$\overline{\text{MP}}$ switch input. "L": MP. "H": ME.</td></tr>
<tr><td>19</td><td>Hi8 MP SW</td><td>I</td><td>Hi8 MP switch input. "H": Hi8 MP, "L": Normal MP or ME.</td></tr>
<tr><td>20</td><td>$\overline{\text{LM LIM ON}}$</td><td>O</td><td>Loading motor limiter on detection signal. Normally "H": "L" when limiter is on.</td></tr>
<tr><td>21</td><td>LINE MIX</td><td>O</td><td rowspan="5">Not used.</td></tr>
<tr><td>22</td><td>MX SEL 1</td><td>O</td></tr>
<tr><td>23</td><td>MX SEL 2</td><td>O</td></tr>
<tr><td>24</td><td>MX ON/OFF</td><td>O</td></tr>
<tr><td>25</td><td>COMP REC</td><td>O</td></tr>
<tr><td>26</td><td>CAM/$\overline{\text{LINE}}$</td><td>O</td><td>Camera input/line input switching signal. "H": Camera input. Normally "H".</td></tr>
<tr><td>27</td><td>$\overline{\text{WIND}}$</td><td>O</td><td rowspan="2">Not used.</td></tr>
<tr><td>28</td><td>N.C.</td><td></td></tr>
<tr><td>29</td><td>UNLOAD</td><td>O</td><td>Loading motor control signal. When unloading: "H" or "H" pulse.</td></tr>
<tr><td>30</td><td>LOAD</td><td>O</td><td>Loading motor control signal. When loading: "H" or "H" pulse.</td></tr>
<tr><td>31</td><td>$\overline{\text{LM LIM CONT}}$</td><td>O</td><td>Loading motor limiter control signal. Momentarily "H" when loading.</td></tr>
<tr><td>32</td><td>DRUM ON</td><td>O</td><td>Drum motor on/off signal. "H" (Approx. 1.3V): Drum on.</td></tr>
<tr><td>33</td><td>DRUM RVS</td><td>O</td><td>Drum rotation direction control signal. Normally "L".</td></tr>
<tr><td>34</td><td>N.C.</td><td></td><td>Not used. (open)</td></tr>
<tr><td>35</td><td>$\overline{\text{EDIT}}$</td><td>O</td><td rowspan="2">Not used.</td></tr>
<tr><td>36</td><td>E/$\overline{\text{L}}$ OUT</td><td>O</td></tr>
<tr><td>37</td><td>MP</td><td></td><td>Connected to GND.</td></tr>
<tr><td>38</td><td>$\overline{\text{RESET}}$</td><td>I</td><td>Reset signal from mode control micro processor (VS board IC503). When reset: "L". Normally "H".</td></tr>
<tr><td>39</td><td>VSS</td><td></td><td>GND</td></tr>
</table>

Pin No.	Signal Name	I/O	Function
40	XTAL	O	11.718 MHz clock oscillation circuit.
41	EXTAL	I	
42	$\overline{\text{MECHA CON CS}}$	I	Chip select signal from mode control micro processor (VS board IC503).
43	DATA TO SLAVE	I	Serial data input from mode control micro processor.
44	DATA TO MASTER	O	Serial data output to mode control micro processor.
45	$\overline{\text{MODECON SCK}}$	I	Serial clock input from mode control micro processor.
46	AUDIO MUTE	O	Audio output mute signal. "H": Mute.
47	VIDEO MUTE	O	Video output mute signal. "H": Mute.
48	MONO REC (1.7M $\overline{\text{ON}}$/OFF)	O	Not used.
49	N.C.		
50	AVSS		A/D converter system GND.
51	AVREF		A/D converter system reference voltage. Connected to SS3.6V.
52	AVDD		A/D converter system power supply. Connected to SS3.6V.
53	EXT MIC	I	External microphone discrimination input. Not used.
54	TAPE END SENS	I	Tape end detection signal. Normally: "L". "H" pulse at tape end.
55	TAPE TOP SENS	I	Tape top detection signal. Normally: "L". "H" pulse at tape top.
56	$\overline{\text{DEW DET}}$	I	Condensation detection signal. "L" when condensation present.
57	N.C.		Not used. Connected to GND.
58	ATF ERROR	I	ATF error input.
59	S REEL FG	I	S reel FG signal input.
60	T REEL FG	I	T reel FG signal input.
61	NC		Not used. Connected to GND.
62	CAM VD	I	VD signal from camera circuit sync generator (VC board IC610). V cycle pulse.
63	FLD	I	FIELD signal from camera circuit sync generator.
64	VTR SYNC	I	Composite sync signal separated from recording/playback Y signal.
65		I	Connected to GND.
66	DRUM PG	I	Drum PG signal input. For drum phase servo. 40 msec. cycle "H" pulse.
67	DRUM FG	I	Drum FG signal input. For drum speed servo. 3.3 msec. cycle pulse.
68	CAP FG	I	Capstan FG signal input.
69	N.C.	O	Not used.
70	T/E LED ON	O	TAPE LED on/off signal. 200 msec. cycle "H" pulse during REC/PB.
71	SP/$\overline{\text{LP}}$	O	SP/LP switching signal. "L": LP.
72	ME/$\overline{\text{MP}}$ OUT	O	Recording current switching signal. "H": ME tape.
73	CAP PWM	O	Capstan error signal output. PWM signal.
74	DRUM PWM	O	Drum error signal output. PWM signal.
75	CFG HMS	I	Capstan FG signal input.
76	5.9M ATF CLK	O	Clock signal for ATF servo IC (IC508).
77	$\overline{\text{CS TO ATF}}$	O	Chip select signal for ATF servo IC.
78	DATA TO ATF	O	Serial data output to ATF servo IC.
79	$\overline{\text{ATF SCK}}$	O	Serial clock output to ATF servo IC.
80	ATF STBY	O	Standby signal for ATF servo IC.

Pin No.	Signal Name	I/O	Function
81	SP/LP DET	I	Discriminates recording mode.
82	CLOG DET	I	Head clog detection signal. "L": Normal.
83	REF PILOT	O	Reference pilot signal for ATF servo.
84	N.C.		Not used. Connected to GND.
85	N.C.	I	
86	VSS		GND
87	VDD		Connected to SS5V.
88	VPP		
89	DRUM ACC	O	Not used.
90	DRUM BLK	O	Drum motor brake signal. Normally: "L".
91	N.C.		Not used. (open)
92	N.C.	O	
93	VIDEO IN/$\overline{\text{OUT}}$	O	Video input/output switching signal. "H": Video output.
94	AUDIO $\overline{\text{IN}}$/OUT	O	Audio input/output switching signal. "H": Audio output.
95	VA PB MODE	O	REC/PB switching signal of video; audio circuit. "H": PB.
96	VI SWP	O	RF switching pulse signal for video circuit.
97	RF SWP	O	RF switching pulse signal for REC/PB amp and audio circuit.
98	HEAD CHG	O	Not used.
99	CAP ON	O	Capstan driver on/off control signal. "H": Capstan on.
100	CAP FWD/$\overline{\text{RVS}}$	O	Capstan rotation direction control signal. "H": FWD. "L": RVS.

6-4. MODE CONTROL MICRO PROCESSOR PIN FUNCTIONS
(VS-123 BOARD IC503: MB89098PFV-G-107-BND)

Pin No.	Signal Name	I/O	Function
1	TEST MODE 0	I	Connected to GND.
2	TEST MODE 1	I	Connected to GND.
3	X0	I	10 MHz clock oscillation circuit.
4	X1	O	
5	VSS		GND
6	$\overline{\text{RESET}}$	I	Reset input.
7	$\overline{\text{DATA SW}}$	I	Date (+) key (CK board S221) input. Normally "H". "L" when key is pressed.
8	$\overline{\text{TIME SW}}$	I	Time key (CK board S222) input. Normally "H". "L" when key is pressed.
9	$\overline{\text{EJECT SW}}$	I	Cassette eject switch (FK board S103) input. Normally "H". "L" when switch is pressed.
10	$\overline{\text{VTR MODE SW}}$	I	Power supply switch (CK board S223) input. "L" when power supply switch is at "Video".
11	$\overline{\text{AGE SW}}$	I	AGE switch (CK board S200) input. "L" when key is pressed.
12	$\overline{\text{START/STOP SW}}$	I	Start/stop key (FK board S102) input. "L" when key is pressed.
13	$\overline{\text{CC DOWN SW}}$	I	CCDOWN switch (mechanism section) input. "L" when cassette compartment is locked.
14	$\overline{\text{CAM+STBY SW}}$	I	Power supply switch (CK board S223), stand-by switch (FK board S101) input. "L" when power supply switch is at "Camera" and stand-by switch at "Standby".
15	BATT IN	I	Main battery detection input. "H" when main battery is loaded or external power supply is connected.
16	PB V	I	System sync signal from mechanism control micro processor (VS board IC505).
17	RF SWP	I	RF switching pulse.
18	$\overline{\text{LANC POWER ON}}$	I	Power on signal input from wired remote commander. "L" when power switch of remote commander is pressed.
19	$\overline{\text{LI PRE END}}$	I	Lithium battery end detection input. "L" when lithium battery has worn out or has not been loaded.
20	$\overline{\text{EEPROM WE}}$	O	EEPROM (VS board IC502) writing enable signal. "L" when writing data.
21			Not used.
22			
23	$\overline{\text{TALLY LED}}$	O	Tally LED on/off signal.
24	$\overline{\text{SYSTEM RESET}}$	O	Reset signal of all systems. Normally "H". "L" when reset.
25	N.C.	O	Not used.
26	CLK 10M/$\overline{\text{32K}}$	I	
27	DATA TO MOC		Not used.
28	N.C.		
29	N.C.		
30	$\overline{\text{SIRCS SIG}}$	I	Infrared remote commander signal input.
31	N.C.		Not used.
32			
33	$\overline{\text{CS EEPROM}}$	O	Chip select signal to EEPROM (VS board IC501).
34	$\overline{\text{CS VIDEO}}$	O	Chip select signal to video IC (VS board IC201).
35	EVF DA STB	O	Not used.
36	$\overline{\text{CS SG}}$	O	Chip select signal to SYNC generator (VC board IC610).
37	CS DA	O	Strobe signal to DA (VS board IC951).
38	$\overline{\text{CS CAM}}$	O	Chip select signal to camera micro processor (VC board IC602).
39	N.C.	O	Not used.
40	N.C.	O	
41	N.C.		Not used.
42	N.C.		
43	SEG19	O	Not used.
44	SEG18	O	
45	SEG17	O	
46	SEG16	O	
47	VCC		+3.6V power supply (+3V power supply during backup).
48	SEG15	O	Not used.
49	SEG14	O	
50	SEG13	O	
51	SEG12	O	
52	SEG11	O	
53	SEG10	O	
54	SEG09	O	
55	SEG08	O	
56			GND
57	SEG07	O	Not used.
58	SEG06	O	
59	SEG05	O	
60	SEG04	O	
61	SEG03	O	
62	SEG02	O	
63	SEG01	O	
64	SEG00	O	
65	V3	I	3.6V Not used.
66	V2	I	2.4V
67	V1	I	1.2V
68	V0	I	0V
69	COM0	O	Not used.
70	COM1	O	
71	COM2	O	
72	COM3	O	
73	$\overline{\text{CS OSD}}$	O	Chip select signal to character generator (VC board IC614).
74	$\overline{\text{CS}}$ $\overline{\text{MECHA}}$	O	Chip select signal to mechanism control micro processor (VS board IC505).
75	DATA TO MASTER	I	Serial data input signal.
76	DATA TO SLAVE	O	Serial data output signal.
77	$\overline{\text{MODECON SCK}}$	O	Serial data transfer clock.
78	N.C.	O	Not used.
79	VTR DD ON	O	VTR DC-DC converter control signal. "H" when power switch is at "Player" or "Camera".
80	CAM DD ON	O	CAMERA DC-DC converter control signal.
81	AVSS		A/D port GND.

Pin No.	Signal Name	I/O	Function
82	K AD IN 0	I	Key input. A/D port. FF key (FK board S105) STOP key (FK board S104)
83	K AD IN 1	I	Key input. A/D port. PLAY key (FK board S111) REW key (FK board S110) PAUSE key (FK board S109)
84	K AD IN 2	I	Key input. A/D port. SET key (CK board S204) SELECT (–) key (CK board S203) SELECT (+) key (CK board S202) MENU key (CK board S201)
85	K AD IN 3	I	Key input. A/D port. FADER key (CK board S208) BACK LIGHT key (CK board S207) PROGRAM AE key (CK board S205)
86	K AD IN 4	I	Key input. A/D port. EDIT SEARCH (–) key (CK board) EDIT SEARCH (+) key (CK board) COUNTER RESET key (CK board)
87	N.C.		Not used.
88	N.C.		
89	N.C.		
90	AVCC		A/D port power supply (+3.6V).
91	BATT SENS	I	For main battery voltage input. (Voltage divided into 1/3.14 by R586, R587).
92	N.C.	I	Not used.
93	BRIGHA B	I	
94	BRIGHT B	I	
95	LANC IN	I	LANC serial data input.
96	LANC OUT	O	LANC serial data output.
97	BUZZER	O	Not used.
98	VCC		+3.6V power supply.
99	CLI	O	32 kHz clock oscillation circuit (for clock).
100	CLO	I	

6-5. INTERFACE

6-5-1. System Control – Video/Audio Block Interface (VS-123 BOARD)

NAME	I/O	No.	VTR MODE				CAMERA MODE	
			STOP	FF	REW	PB	STAND BY	REC
SP/$\overline{\text{LP}}$	O	IC505 (71)	H	H	H	*2	H	H
VA PB MODE	O	IC505 (95)	L	L	L	H	L	L
AUDIO MUTE *13	O	IC505 ㊻	L	L	L	L	L	L
VIDEO MUTE	O	IC505 ㊼	L	*14	*14	*15	L	L
CAM/$\overline{\text{LINE}}$	O	IC505 ㉖	L	L	L	L	H	H
JOG VD	O	IC505 ③	L	L	L	L	L	L
RP PB MODE	O	IC505 ①	H	H	H	H	H	L
$\overline{\text{FE ON}}$	O	IC505 ②	H	H	H	H	H	L
RF SWP	O	IC505 (97)	L	*7	*7	*7	*7	*7
JOG	O	IC505 ④	L	L	L	L	L	L
$\overline{\text{CS VIDEO}}$	O	IC503 ㉞	V period "L" pulse					
CS DA	O	IC503 ㊲	V period "H" pulse					
DATA TO SLVE	O	IC503 (76)	V period pulse train					
$\overline{\text{MODECON SCK}}$	I	IC503 (77)	V period pulse train					
SP/$\overline{\text{LP}}$ DET	I	IC505 (81)	L	*10	*10	L	H	H
CLOG DET	I	IC505 (82)	L	*11	*11	*11	*11	H
VTR SYNC	I	IC505 (64)	L	*12	*12	*12	*12	*12
COMP REC	O	IC505 ㉕	L	H	H	L	L	L

*2. Outputs discrimination result of the playback tape.
"H" : SP mode, "L": LP mode.
*7. 25 Hz duty 50% pulse (synchronized with drum rotation)
*10. "H": SP recording area on tape. "L": LP recording area.
*11. "H": no recording area.
*12. Composite sync signal.
*14. "L" when external input (video) present.
*15. "H" when tape no signal.

6-5-2. System Control – Servo Block Interface (VS-123 BOARD)

NAME	I/O	No.	VTR MODE				CAMERA MODE	
			STOP	FF	REW	PB	STAND BY	REC
T.REEL FG	I	IC505 (60)	–	*1	*1	*1	–	*1
S.REEL FG	I	IC505 (59)	–	*1	*1	*1	–	*1
ATF ERROR	I	IC505 (58)	–	*2	*2	*2	*2	*2
DRUM PG	I	IC505 (66)	–	*3	*3	*3	*3	*3
DRUM FG	I	IC505 (67)	–	*4	*4	*4	*4	*4
CAP FG/CFG HMS	I	IC505 (68), (75)	–	*5	*5	*5	*5	*5
CAP ON	O	IC505 (99)	L	H	H	H	L	H
REF PILOT	O	IC505 (83)	*7	*6	*6	*6	*6	*6
RP PB MODE	O	IC505 ①	H	H	H	H	H	L
DRUM RVS *10	O	IC505 ㉝	H	H	H	H	H	H
CAP FWD/$\overline{\text{RVS}}$	O	IC505 (100)	L	H	L	H	L	H
DRUM PWM	O	IC505 (74)	L	*9	*9	*9	*9	*9
CAP PWM	O	IC505 (73)	L	*9	*9	*9	L	*9
$\overline{\text{LM LIM CONT}}$ *11	O	IC505 ㉛	L	L	L	L	L	L
DRUM ON *14	O	IC505 ㉜	L	H	H	H	H	H
DRUM BRK	O	IC505 (90)	L	L	L	L	L	L

*1. Inputting waveform.
*2. ATF error voltage input.
*3. One PG pulse input.
*4. FG pulses input.
*5. FG pulses input.
*6. Four frequencies.
*7. f_1 (101.0 kHz) or f_3 (162.8 kHz) output
*9. PWM signal.
*10. Normally "H".
Temporary "L" when load (drum reverse rotation).
*11. Temporary "H" when cassette loading
(finger catch protection).
*14. "H": approx. 1.3 Vdc.

SECTION 7
ADJUSTMENTS

7-1. CAMERA SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 7–22.

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Regulated power supply
- Color monitor
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly)[Note 1]	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Extension cable (42P, 0.8 mm)	J-6082-285-A	For extension between the VC-159 board (CN601) and VS-123 board (CN203)
J-8	Extension cable (9P, 0.8 mm)	J-6082-288-A	For extension between the FK board and VS-123 board (CN502)
	Extension cable (18P, 0.8 mm)	J-6082-289-A	For extension between the CK board and VS-123 board (CN503)

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

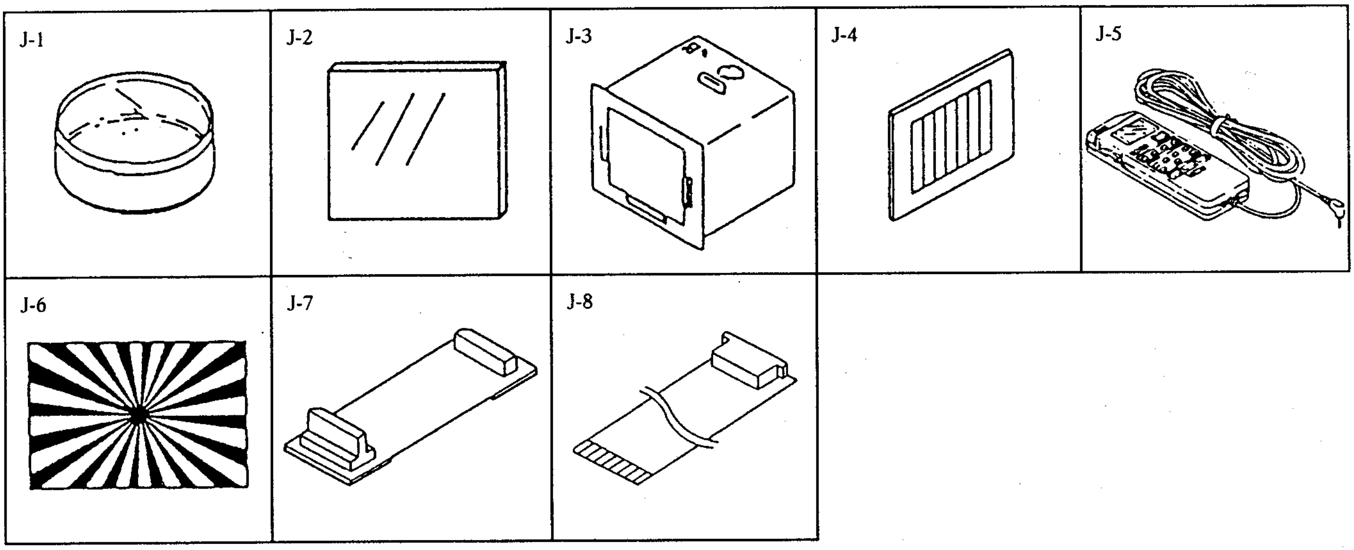


Fig. 7-1-1.

1-1-2. Preparations

Note 1: For further details of how to remove the cabinet and each board, refer to "2. Disassembly".

Note 2: When adjusting only, the lens block and VC-159 board need not be taken apart.

1) Connect the equipments for adjusting as shown in Fig. 7-1-3.
2) The F panel block (microphone board) is not required in adjustments. Remove the following connector.
   1. CN003 of the MA-230 board
3) If remove the cabinet (R) (Power switch, camera function switch and electronic view-finder), set to the camera power supply ON mode (Note 1), and disconnect the following connectors.
   1. CN503 of VS-123 board
   2. CN206 of VS-123 board
   3. CN101 of ZB-2 board

   Be sure to exit this mode after completing the adjustment. (Note 2)
4) Turning OFF the Auto Focus Using the Adjusting Remote Commander
   1. Set data: 01 to page: 6, address: 25.
      (The auto focus will turn OFF. The focus can be adjusted using the focus button on the adjusting remote commander. But the HOLD switch must be set to OFF.)
   2. After completing the adjustment/operation check, set data: 00 to page: 6, address: 25.

Note 1: Setting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above, the camera can be operated even if the cabinet (R) has been removed. Be sure to exit the forced camera power ON mode after completing the adjustment.

Note 2: Exiting the Forced Camera Power Supply ON Mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

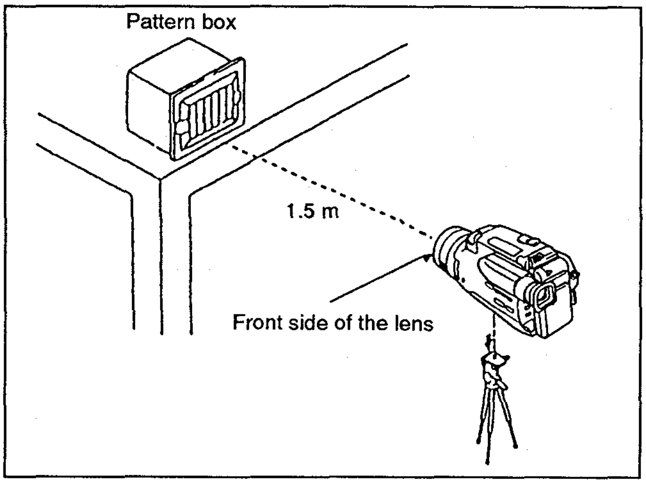


Fig. 7-1-2.

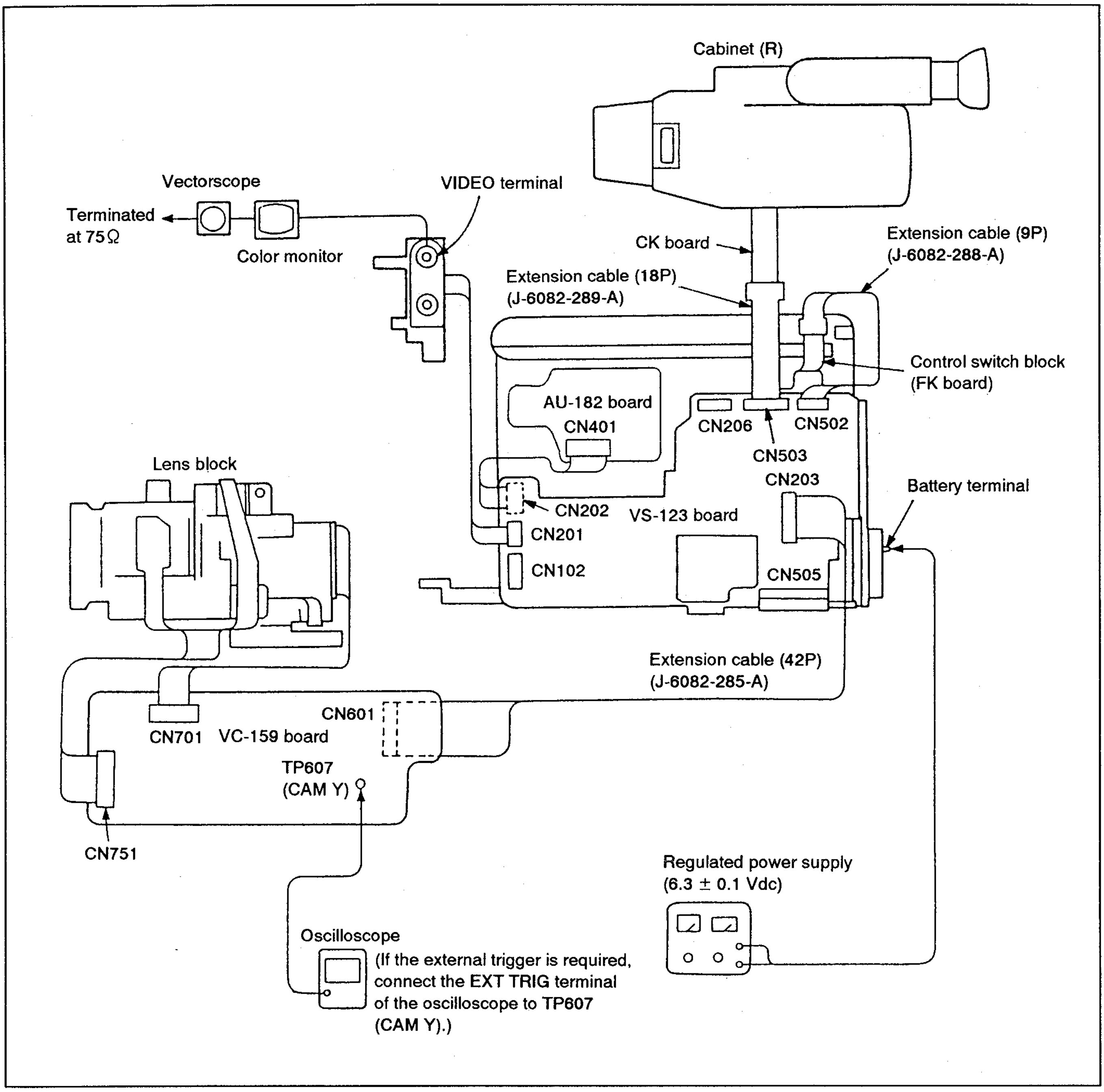

Cabinet (R)
Vectorscope
Terminated at 75Ω
Color monitor
VIDEO terminal
CK board
Extension cable (9P) (J-6082-288-A)
Extension cable (18P) (J-6082-289-A)
Control switch block (FK board)
AU-182 board
CN401
CN206
CN502
CN503
CN203
Lens block
Battery terminal
CN202
VS-123 board
CN201
CN102
CN505
Extension cable (42P) (J-6082-285-A)
CN601
CN701
VC-159 board
TP607 (CAM Y)
CN751
Regulated power supply (6.3 ± 0.1 Vdc)
Oscilloscope
(If the external trigger is required, connect the EXT TRIG terminal of the oscilloscope to TP607 (CAM Y).)

Fig. 7-1-3.

1-1-3. Precautions

1. Switch settings

Adjust the switches to the following positions, and adjust without loading the cassette tape, unless specified otherwise.

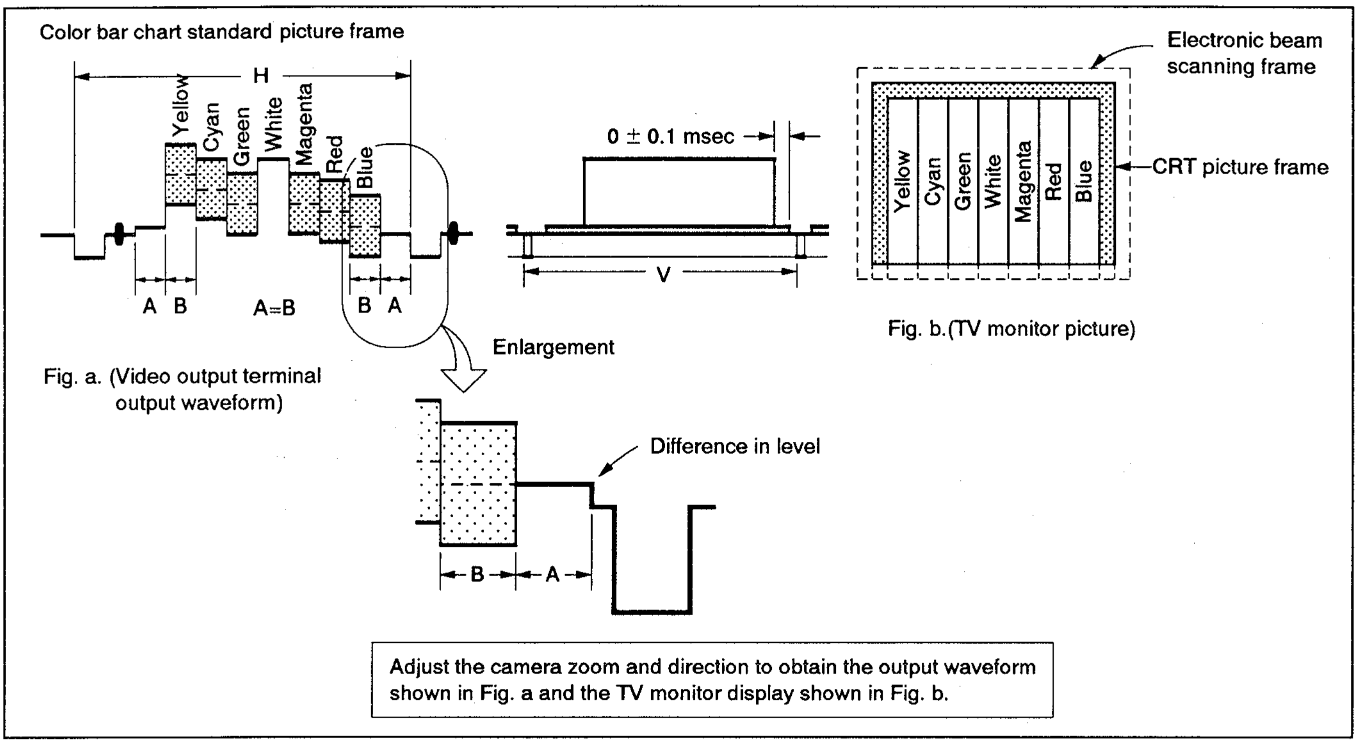
1. Camera/player power switch (Control switch block (CK board))······················Camera
2. Standby switch (Control switch block (FK board)) ·· Standby
3. PROGRAM AE button (Control switch block (CK board)) ···Off
4. BACK LIGHT button (Control switch block (CK board)) ···Off

2. Adjusting Procedure

Adjust in the given order.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 7-1-4. if adjustments are performed using the color bar chart. (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and so that the white pattern will be displayed.
   (Don't touch the zoom switch)


Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A
Fig. a. (Video output terminal output waveform)
0 ± 0.1 msec
V
Enlargement
Difference in level
B
A
Electronic beam scanning frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
Fig. b.(TV monitor picture)

Adjust the camera zoom and direction to obtain the output waveform shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 7-1-4.

3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm× 841 mm) paper to a black one, and make the chart shown in Fig. 7-1-5.

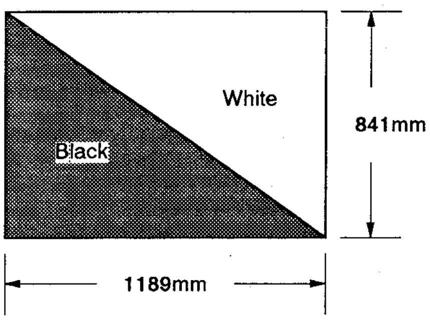

White
Black
841mm
1189mm

Fig. 7-1-5.

Note: Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

Use the adjusting remote commander to change the coefficient of the digital signal processing or the EVR data.
The adjusting remote commander uses the remote commander signal line (LANC) to perform the bidirectional communication with the camera microprocessor. The effect data of the bidirectional communication must be written in the nonvolatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the remote terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 7-1-6.

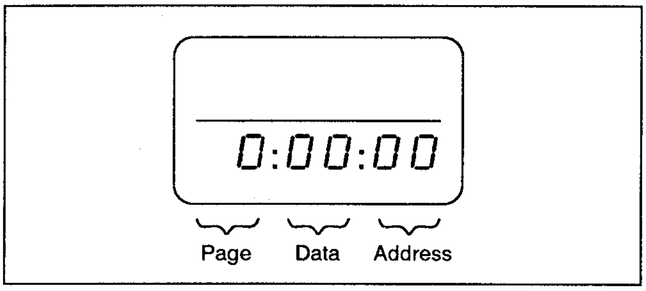


Fig. 7-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1-1.

   - Changing the address
     The address increases when the FF (►►) button is pressed, and decreases when the REW (◄◄) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (►) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)
4) Select page: 6, address: 00, and adjust the data to 01. Page F, and enables the camera section (Addresses 01 to BF of page F) to be adjusted.
5) After completing all adjustments, turn off the main power supply (6.3V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Page F Address List

Note 1: The data already listed in the adjustment data memo column are fixed values.

Note 2: The adjustment data initial values are values just after executing “Page F Data Initialization” and “Page F Data Modification”. They are different from the values after executing all adjustments.

Note 3: In some cases, data have been input to the page F addresses C0 to FF. This has no relation to the adjustments.

Note 4: ⟨ ⟩: Setting data when the data of page: 6, address: 10 is 10.

[ ] : Setting data when the data of page: 6, address: 10 is 20.

Address	Adjustment data	
	Initial value	Memo column
00	7F	7F
01 Note 4	⟨2B⟩, [23]	⟨2B⟩, [23]
02	00	00
03	00	00
04	80	
05	80	
06	80	
07	80	
08	2D	
09	26	
0A	FA	
0B	F1	
0C	30	
0D	00	
0E	58	
0F	00	
10	E0	E0
11	8F	
12	6C	
13	36	
14	3C	
15	60	
16	0D	
17	A3	
18	12	
19	8E	
1A	10	
1B	E2	
1C	0E	0E
1D	00	00
1E	80	80
1F	80	80
20	79	79
21	79	79
22	00	00

Table 7-1-2 (1).

Address	Adjustment data	
	Initial value	Memo column
23	59	59
24	4C	4C
25	A5	A5
26	23	23
27	3F	3F
28	23	23
29	0E	0E
2A	04	04
2B	40	40
2C	FF	FF
2D	42	42
2E	17	17
2F	28	28
30	00	00
31	00	00
32	58	58
33	68	68
34	02	02
35	35	35
36	02	02
37	00	00
38	63	63
39	6A	6A
3A	50	50
3B	20	20
3C	C0	C0
3D	00	00
3E	00	
3F	00	
40	00	
41	00	
42	00	
43	00	
44	00	
45	00	
46	00	
47	00	
48	00	
49	00	
4A	00	
4B	00	
4C	00	
4D	00	

Table 7-1-2 (2).

Address	Adjustment data	
	Initial value	Memo column
4E	00	00
4F	20	20
50	04	04
51	02	02
52	66	66
53	18	18
54	66	66
55	9F	9F
56	66	66
57	66	66
58	59	59
59	83	83
5A	67	67
5B	5C	5C
5C	5C	5C
5D	4A	4A
5E	1E	1E
5F	5C	5C
60	3A	3A
61	33	33
62	0C	0C
63	26	26
64	24	24
65	02	02
66	04	04
67	05	05
68	00	00
69	00	00
6A	00	00
6B	00	00
6C	00	00
6D	00	00
6E	02	02
6F	33	33
70	B0	B0
71	18	18
72	0F	0F
73	0F	0F
74	02	02
75	63	63
76	1B	1B
77	E8	E8
78	A0	A0
79	28	28

Table 7-1-2 (3).

Address	Adjustment data	
	Initial value	Memo column
7A	0D	0D
7B	50	50
7C	58	58
7D	88	88
7E	66	66
7F	46	46
80	8F	8F
81	00	00
82	20	20
83	18	18
84	02	02
85	08	08
86	40	40
87	20	20
88	40	40
89	30	30
8A	50	50
8B	60	60
8C	80	80
8D	27	27
8E	6C	6C
8F	00	00
90	00	00
91	77	77
92	00	00
93	FB	FB
94	02	02
95	32	32
96	6B	6B
97	8D	8D
98	A1	A1
99	30	30
9A	30	30
9B	21	21
9C	91	91
9D	72	72
9E	00	00
9F	00	00
A0	00	00
A1	00	00
A2	00	00
A3	00	00
A4	02	02
A5	80	80

Table 7-1-2 (4).

Address	Adjustment data	
	Initial value	Memo column
A6	00	00
A7	80	80
A8	00	00
A9	80	80
AA	00	00
AB	80	80
AC	00	00
AD	00	00
AE	02	02
AF	87	87
B0	39	39
B1	25	25
B2	39	39
B3	25	25
B4	32	32
B5	4A	4A
B6	00	00
B7	20	20
B8	00	00
B9	05	05
BA	00	00
BB	20	20
BC	80	80
BD	00	00
BE	00	00
BF	00	00
C0 to FF		

Table 7-1-2 (5).

1-1-6. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 7-1-3. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

②

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	80	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B (b)	176	177	178	179	180	180	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote control unit display.

(Example) In the case that the DDS display and the adjusting remote control unit display are BD (b d).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection "189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 7-1-3.

1-2. CAMERA SYSTEM ADJUSTMENT

1. Power Supply Voltage Check (DD-76 board)

Subject	Option
Measuring instrument	Digital voltmeter
D5V check	
Measurement point	Pins ㉙ of CN901
Specified value	4.9 ± 0.1 Vdc
D3.6V check	
Measurement point	Pins ㉑ and ㉒ of CN901
Specified value	3.6 ± 0.1 Vdc
CAM 5V check	
Measurement point	Pins ㉕ and ㉖ of CN901
Specified value	4.85 ± 0.1 Vdc
CAM 15V check	
Measurement point	Pin ㉗ of CN901
Specified value	15 ± 0.3 Vdc
CAM –9V check	
Measurement point	Pin ㉛ of CN901
Specified value	$-8.5^{+0.25}_{-0.4}$ Vdc

Checking method:

1) Check that each power supply voltage satisfies the specified value.

2. Page F Data Initialization

Note: It is necessary to perform all adjustments of the camera section from the beginning again if the data of page F has been initialized.

Initializing method:

1) Set data: 01 to page: 6, address: 00.
2) Check that the data of page: 6, address: 11 is 00.
3) Set data: 2F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the data of page: 6, address: 11 is 01.
5) Set data: 00 to page: 6, address: 01. and press the PAUSE button of the adjusting remote commander.
6) After performing "Page F data modification", perform all the adjustments of the camera section (page F).

3. Page F Data Modification 1

When the page F data is initialized, change the data by manual input.

Note 1: When changing the data, to write the data to the non-volatile memory, press the PAUSE button of the adjusting remote commander every time the new data is set.

Note 2: When changing address: 00, set the data of page: 6, address: 00 to 80.

Note 3: 〈 〉: Setting data when the data of page: 6, address: 10 is 10.

[ ] : Setting data when the data of page: 6, address: 10 is 20.

Address	Data
00	7F
01 Note 3	〈2B〉, [23]
03	00
1C	0E
25	A5
2A	04
2B	40
2D	42
2E	17
2F	28
30	00
32	58
34	02
35	35
38	63
50	04
54	66
57	66
58	59
5E	1E
60	3A
6E	02
74	02
77	E8
83	18
8D	27
8E	6C
94	02
B6	00

Table 7-1-4.

4. 28 MHz Original Oscillation Adjustment (VC-159 board)

Adjust the 28 MHz oscillation of the synchronization clock.
If the oscillation is not 28 MHz, the period will be inaccurate or the image will not be in color.

Subject	Not required
Measurement Point	Pin ⑧ of IC753 (JL708) (TP709)
Measuring Instrument	Frequency counter
Adjusting Element	CT701
Specified Value	14187500 ± 70 Hz

Adjusting method:
1) Use CT701 to adjust the oscillation frequency to 14187500 ± 70 Hz.

5. V SUB Adjustment

Set the CCD imager V SUB voltage to the voltage specified for the imager.

Subject	Not required
Adjustment Page	F
Adjustment Address	04

Adjusting Method:
1) Read the V SUB voltage code of the CCD imager.
   Obtain the corresponding V SUB data from the following table.
2) Set data: 01 to page: 6, address: 00.
3) Set the V SUB data to page: F, address: 04.
4) Press the PAUSE button of the adjusting remote commander.

V SUB			V SUB		
Voltage Code	Data	Voltage (Vdc) *1	Voltage Code	Data	Voltage (Vdc) *1
e	71	9.0	q	AD	14.0
f	77	9.5	r	B3	14.5
g	7D	10.0	s	B9	15.0
h	83	10.5	t	BF	15.5
j	89	11.0	u	C5	16.0
k	8F	11.5	v	CB	16.5
l	95	12.0	w	D1	17.0
m	9B	12.5	x	D7	17.5
n	A1	13.0	y	DD	18.0
p	A7	13.5	z	E2	18.5

*1: The V SUB voltages (TP703) given are reference values.

6. VRG Adjustment

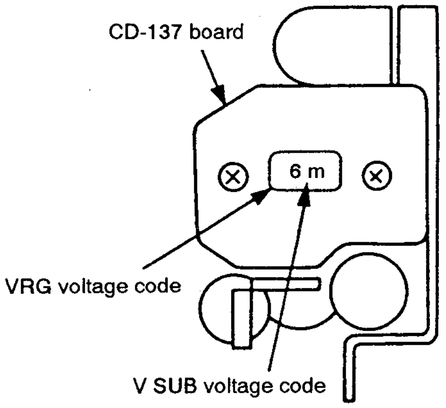
Set the CCD imager V RG voltage to the voltage specified for the imager.

Subject	Not required
Adjustment Page	F
Adjustment Address	05

Adjusting Method:
1) Read the VRG voltage code of the CCD imager.
   Obtain the corresponding VRG data from the following table.
2) Set data: 01 to page: 6, address: 00.
3) Set the VRG data to page: F, address: 05.
4) Press the PAUSE button of the adjusting remote commander.

VRG		
Voltage Code	Data	Voltage (Vdc) *2
1	33	1.0
2	4E	1.5
3	69	2.0
4	84	2.5
5	9F	3.0
6	BA	3.5
7	D5	4.0

*2: The VRG voltages (TP707) given are reference values.



(Example) When “6m” is displayed:
The V SUB voltage code is “m” and therefore the V SUB data will be “9A”.
The VRG voltage code is “6” and therefore the VRG data will be “BA”.

Fig. 7-1-7.

7. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and hall offset.

Subject	Not required
Measurement Point	DDS display of LCD or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	06, 07
Specified Value	32 to 36 during IRIS OPEN B4 to B8 during IRIS CLOSE

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 03 to page: 6, address: 02.
5) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 80 to page: F, address: 07, and press the PAUSE button of the adjusting remote commander.
7) Set data: 40 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
8) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF or the monitor TV display), and this data is named W_2.
9) Set data: 30 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
10) Read the DDS display data, and this data is named W_1.
11) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data, and this data is named K_1.
13) Set data: 40 to page: F, address: 06, and press the PAUSE button.
14) Read the DDS display data, and this data is named K_2.
15) Convert W_1, W_2, K_1, K_2 to decimal notation, and obtain W_1', W_2', K_1', K_2'. (Refer to Table 7-1-3. "Hexadecimal notation-decimal notation conversion table".)
16) Calculate X_1' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \cdots\cdots \text{Equation 1}$$

$$B' = W_1' - K_1' \cdots\cdots \text{Equation 2}$$

$$X_1' = \frac{2080 + (48 \times A') - (16 \times B')}{A'} \cdots\cdots \text{Equation 3}$$

17) Convert X_1' to hexadecimal notation, and obtain X_1. (Round off to one decimal place)
18) Set data: X_1 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
19) Change the data of page: F, address: 07, and adjust the DDS display data to "34".
20) Press the PAUSE button of the adjusting remote commander.
21) Set data: 03 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
22) Read the DDS display data, and this data is named W_0. If W_0 lies within the "B4" to "B8" range, perform "Processing after completing adjustments". If it lies outside the range, perform the following adjustments.
23) Convert W_0 to hexadecimal notation, and obtain W_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).

$$C' = W_0' - B' - 52 \cdots\cdots \text{Equation 4}$$

$$X_2' = \frac{(130 - B') \times (X_1' - 48) + 48 \times C'}{C'} \cdots\cdots \text{Equation 5}$$

(X_1' and B' are values obtained from equations 2 and3)

25) Convert X_2' to hexadecimal notation and obtain X_2. (Round off to one decimal place)
26) Set data X_2 to page: F, address: 06, and press the PAUSE button of the adjusting remote commander.
27) Change the data of page: F, address: 07, and adjust the DDS display data to "B6".
28) Press the PAUSE button of the adjusting remote commander.
29) Set data: 01 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
30) Check that the DDS display data lies within the "32" to "36" range.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

8. Flange Back Adjustment

The flange back adjustment for the inner focus lens is performed automatically.

Subject	Chart for flange back adjustment (2000 ± 5 mm from the front side of the lens Luminance: 300 ± 50 lux)
Measurement Point	Check the operations on the TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	16, 17, 18, 19, 1A, 1B

Adjusting method:

1) Check that the flange back adjustment chart center and the exposure display center coincide at both zoom lens TELE end and WIDE end.
2) Set data: 01 to page: 6, address: 00.
3) Check that the data of page: 6, address: 21 is 00.
4) Check that the page: F, address: 16 to 1B data is at the initial value. (Refer to Table 7-1-4. "Page F address list")
5) Set data: 13 to page: 6, address: 01 and press the PAUSE button of the adjusting remote commander.
6) Set data: 15 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data is automatically input to page: F, addresses: 16 to 1B.)
7) Check that the data of page: 6, address: 21 is 01.
   (Display indicating flange back adjustment completion)

Processing after completing adjustments

1) Turn off the main power supply (6.3V).

9. Flange Back Check

Subject	Siemens star (2m from the front of the lens)
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Specified Value	Focused at the TELE end and WIDE end.

Checking method:

1) Place the Siemens star 2m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appears on the image.
3) Shoot the siemens star with the zoom TELE end.
4) Check that the lens is focused. (Note 2)
5) Set data: 01 to page: 6, address: 25.
6) Shoot the siemens star with the zoom WIDE end.
7) Check that the lens is focused.

Note: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on page A of the adjusting remote commander.

1) Set data: 0C to page: 6, address: 02.
2) Page A shows the state of the focus.

A : 00 : XX

→ (Odd: Focused
Even: Unfocused)

Processing after compleating adjustments

1) Set data: 00 to page: 6, address: 02.
2) Set data: 00 to page: 6, address: 25.

10. Picture Frame Setting

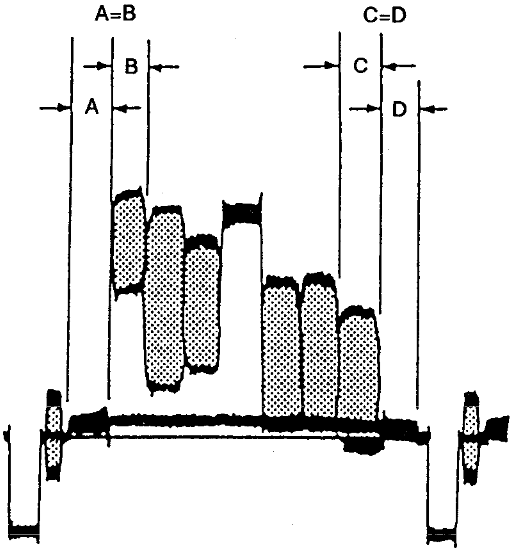
Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor.
Specified Value	A=B, C=D, t=0 ± 0.1 msec

Setting method:

1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "color bar chart standard picture frame".

Check on the oscilloscope

1. horizontal period



2. Vertical period

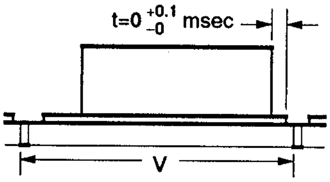

t=0 $^{+0.1}_{-0}$ msec
V

Fig. 7-1-8.

Check on the TV monitor

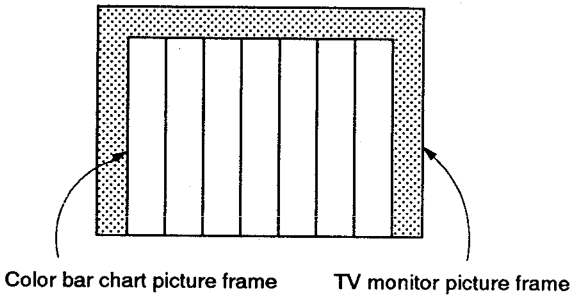

Color bar chart picture frame
TV monitor picture frame

Fig. 7-1-9.

11. Color Reproduction Adjustment

Adjust the color separation matrix coefficient so that the proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	08, 09, 0A, 0B
Specified Value	All color luminance points should settle within each color reproduction frame.

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 00 to page: 6, address: 03.
3) Set data: F1 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
4) Set data: 02 to page: F, address: 50, and press the PAUSE button of the adjusting remote commander.
5) Set data: C6 to page: F, address: 63, and press the PAUSE button of the adjusting remote commander.
6) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
7) Change the data of addresses 08, 09, 0A and 0B of page: F, and settle each color luminance point in each color reproduction frame.

   Note 1: Be sure to press the PAUSE button of the adjusting remote commander before changing the addresses.
   If not, the new data will not be written to the memory.
8) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10 and press the PAUSE button of the adjusting remote commander.
2) Set data: 04 to page: F, address: 50, and press the PAUSE button of the adjusting remote commander.
3) Set data: 26 to page: F, address: 63, and press the PAUSE button of the adjusting remote commander.
4) Set data: 10 to page: 6, address: 03.

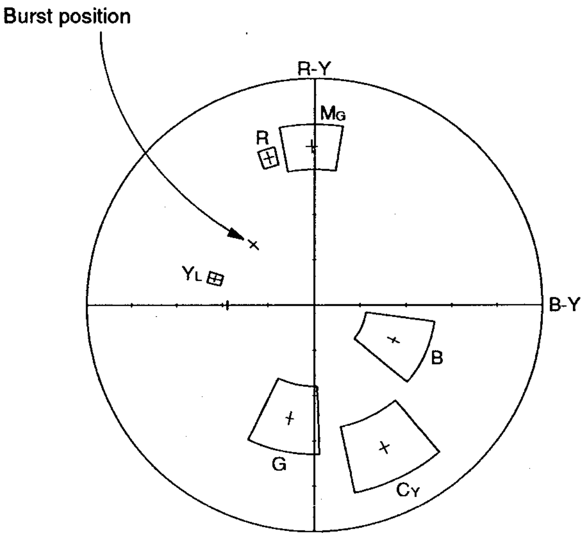


Fig. 7-1-10.

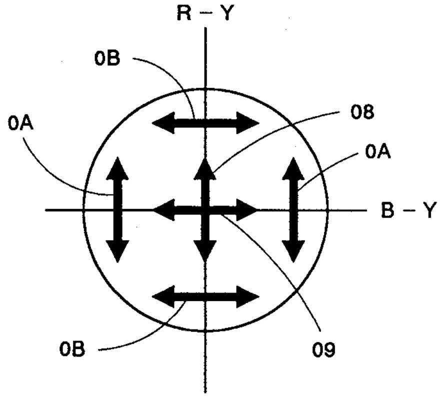


Fig. 7-1-11. Direction of the Movements of the Adjustment Address and Luminance Point

12. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors, measure the light level and write it in the EEPROM.
If the level is not correct, the white balance will not be accurate.

Subject	White pattern
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	13, 14

Adjusting method:

1) Set data: 01 to page: 6, address: 00
2) Set data: 01 to page: 1, address: 00
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 0E to page: 6, address: 02.
5) Set data: 0B to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to a decimal number and obtain D_1'. (Refer to Table 7-1-3. "Hexadecimal Notation-Decimal Notation Conversion Table".)
8) Calculate D_3' using the following equations.
   (Equations 1 and 2 are for decimal notation calculation)
   When $D_2 \geqq$ D0
   D_3'=D_1'−21 ································Equation 1
   When $D_2 <$ D0
   D_3'=D_1'−22································Equation 2
9) Convert D_3' to a hexadecimal number and obtain D_3.
10) Set D_3 to page: F, address: 13, and press the PAUSE button of the adjusting remote commander.
11) Set data: 09 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to a decimal number and obtain D_4'. (Refer to Table 7-1-3. "Hexadecimal Notation-Decimal Notation Conversion Table".)
14) Calculate D_6' using the following equations.
    (Equations 3 and 4 are for decimal notation calculation)
    When $D_5 \geqq$ F0
    D_6'=D_4'−13 ·······································Equation 3
    When $D_5 <$ F0
    D_6'=D_4'−14 ·······································Equation 4
15) Convert D_6' to a hexadecimal number and obtain D_6.
16) Set D_6 to page: F, address: 14, and press the PAUSE button of the adjusting remote commander.

Note 1: The right four digits of the display data at the right bottom side of the EVF and monitor TV is the LIGHT LEVEL data. If the lower digits change severely and cannot be read, record it on a tape once, play it back by frame feeding, and obtain the average value.

Processing after Completing Adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 00, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.

13. MAX GAIN Adjustment

Setting the minimum illumination.
If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	White pattern standard picture frame
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	15
Specified Value	C4 to CC

Adjusting method:

1) Set data: 01 to page: 6, address: 00.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 2, address: 00.
5) Set data: 01 to page: 2, address: 42.
6) Set data: 5A to page: 2, address: 40.
7) Set data: 54 to page: 2, address: 41.
8) Set data: 01 to page: 6, address: 02.
9) Set data: 19 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
10) Change the data of page: F, address: 15 and adjust so that the DDS display data lies within the "C4" to "CC".
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 1, address: 00.
3) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 6, address: 02.
5) Set data: 01 to page: 2, address: 00.
6) Set data: 00 to page: 2, address: 40.
7) Set data: 00 to page: 2, address: 41.
8) Set data: 00 to page: 2, address: 42.
9) Set data: 00 to page: 2, address: 00.

14. Auto White Balance Standard Data Input

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	0C, 0D, 0E, 0F

Adjusting method:

1) Turn the power of the unit OFF/ON.
2) Set data: 01 to page: 6, address: 00.
3) Check that the data of page: 6, address: 11 is 00.
4) Check that the data of page: 6, address: 03 is 10.
5) Wait for 2 seconds.
6) Set data: 11 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Set data: 0D to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is taken in, the data will be automatically input to addresses 0C to 0F of page F.)
8) Check that the data of page: 6, address: 11 is 01.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.

15. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	Check with the DDS display on the EVF or TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	11, 12
Specified Value	R ratio: 2A40 to 2AC0 B ratio: 5E00 to 5F00

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 21 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 01 to page: 6, address: 00.
5) Set data: D0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
6) Set data: 04 to page: 6, address: 02.
7) Change the data of page: F, address: 11, and adjust the average value of the DDS display data (the display data at the bottom right of the EVF or the TV monitor) to the R ratio specified value.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: 05 to page: 6, address: 02.
10) Change the data of page: F, address: 12, and adjust the average value of the DDS display data to the B ratio specified value.
11) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set data: E0 to page: F, address: 10, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 6, address: 02.
4) Set data: 00 to page: 1, address: 00.

16. White Balance Check

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 7-1-12. A to C

Checking method:

1) Check that the lens is not covered with either filter.
2) Set data: 01 to page: 6, address: 00.
3) Set data: 0F to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
4) Check that the center of the white luminance point is within the circle shown in Fig. 7-1-12.A.
5) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
6) Set data: 23 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
7) Place the C14 filter on the lens.
8) Check that the center of the white luminance point settles in the circle shown in Fig. 7-1-12. B.
9) Remove the C14 filter, and place the ND filter 1.3 (1.0+0.3) on the lens.
10) Check that the center of the white luminance point settles in the circle shown in Fig. 7-1-12. C.

Processing after completing adjustments

1) Set data: 00 to page: 6, address: 01, and press the PAUSE button of the adjusting remote commander.
2) Set data: 00 to page: 6, address: 00, and press the PAUSE button.

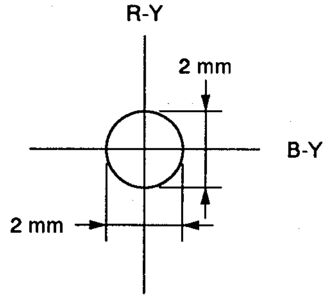


Fig. 7-1-12. A

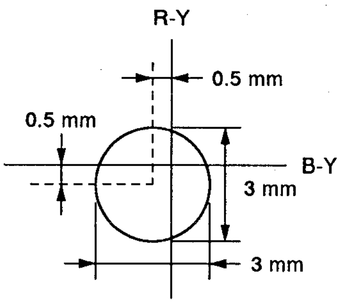


Fig. 7-1-12. B

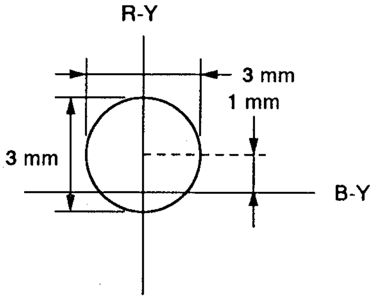


Fig. 7-1-12. C

17. VIDEO OUT Level Check

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal (Terminated at 75 Ω)
Measuring Instrument	Oscilloscope
Specified Value	SYNC level=300 ± 20 mV BURST level=300 ± 30 mV

Checking method:

1) Check that the Y level, SYNC level and BURST level satisfy the specified values.

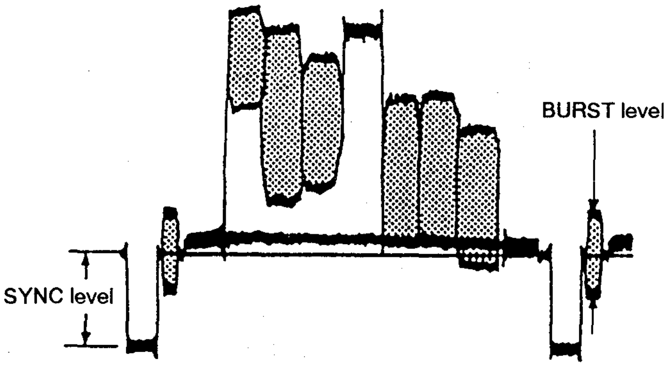


Fig. 7-1-13.

1-3. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

1-3-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified Value	See Fig. 7-1-15.

Adjustment method:

1) Adjust RV503 (BRIGHT) for appropriate brightness on CRT screen.
2) Loosen the DY (deflection yoke) tightening nut. (See Fig. 7-1-14.)
3) Make a picture horizontal by turning the DY.
4) Retighten the nut. (Do not tighten excessively.)

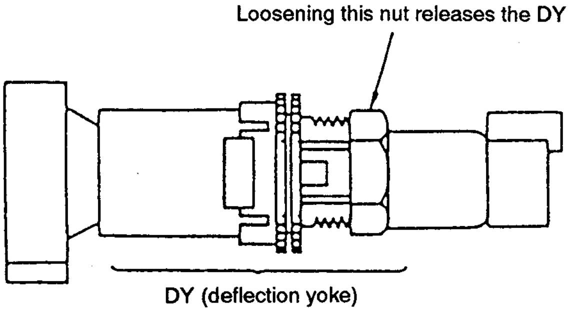
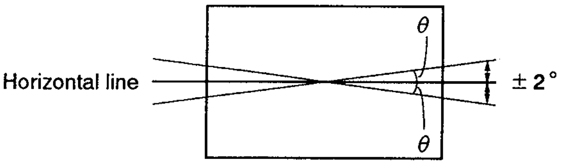

Loosening this nut releases the DY
DY (deflection yoke)

Fig. 7-1-14.


θ
Horizontal line
± 2 °
θ

Specified value: Image orientation within ± 2 ° of horizontal line.

Fig. 7-1-15.

1-3-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for checking operation (WR5-5CSP) Monoscope portion
Specified Value	See Fig. 7-1-17.

Adjustment method:

1) Turn the centering adjustment rings to provide an image with even right, left, upper and lower margins. (See Fig. 7-1-16.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation which exhibits median displacements of the image.

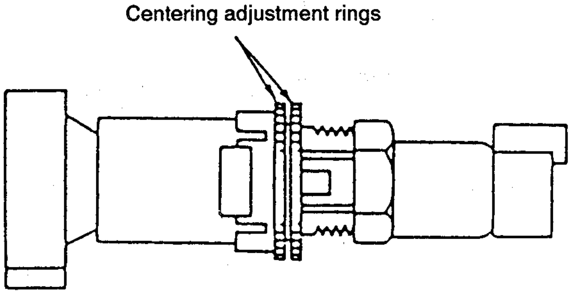

Centering adjustment rings

Fig. 7-1-16.

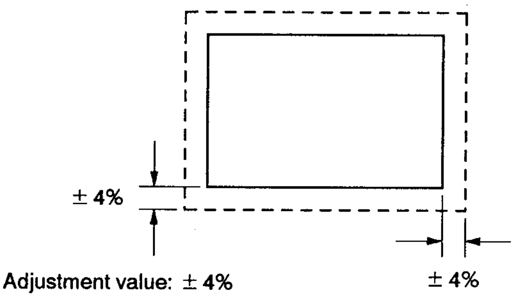
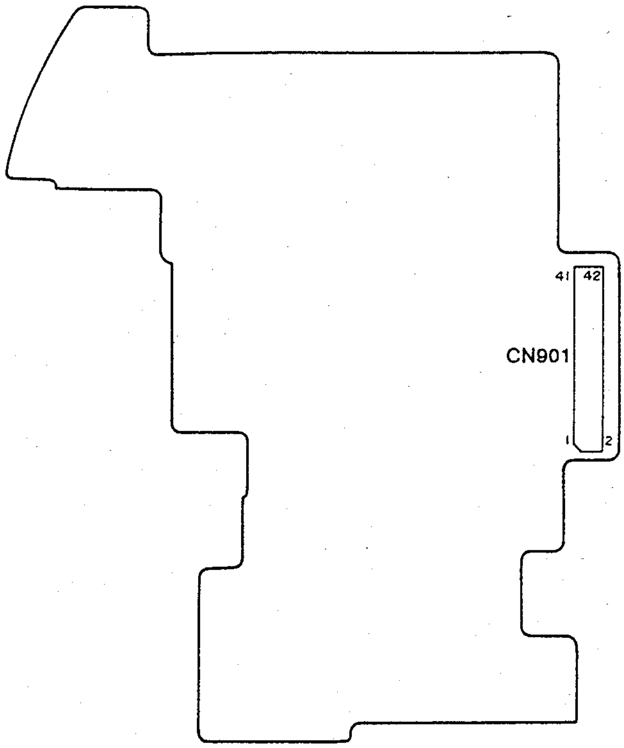

± 4%
Adjustment value: ± 4%
± 4%

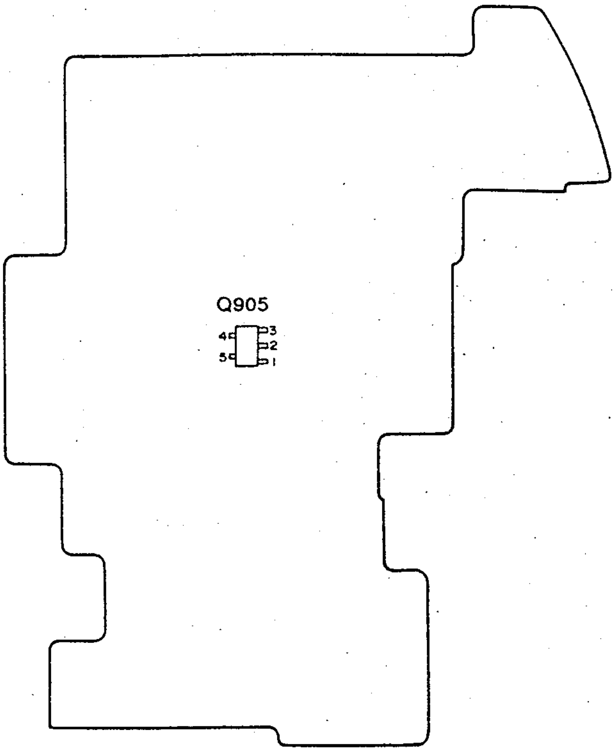
Fig. 7-1-17.

1-4. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

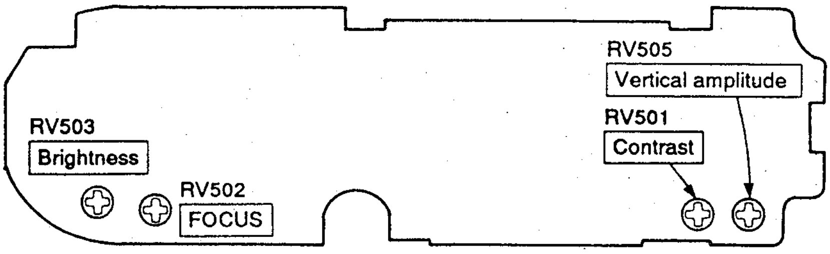
DD-76 BOARD (COMPONENT SIDE)


41
42
CN901
1
2

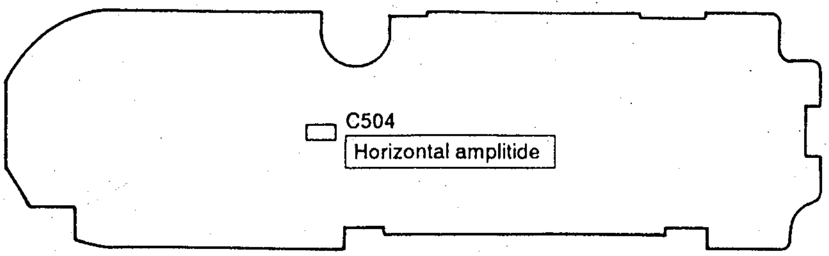
DD-76 BOARD (CONDUCTOR SIDE)



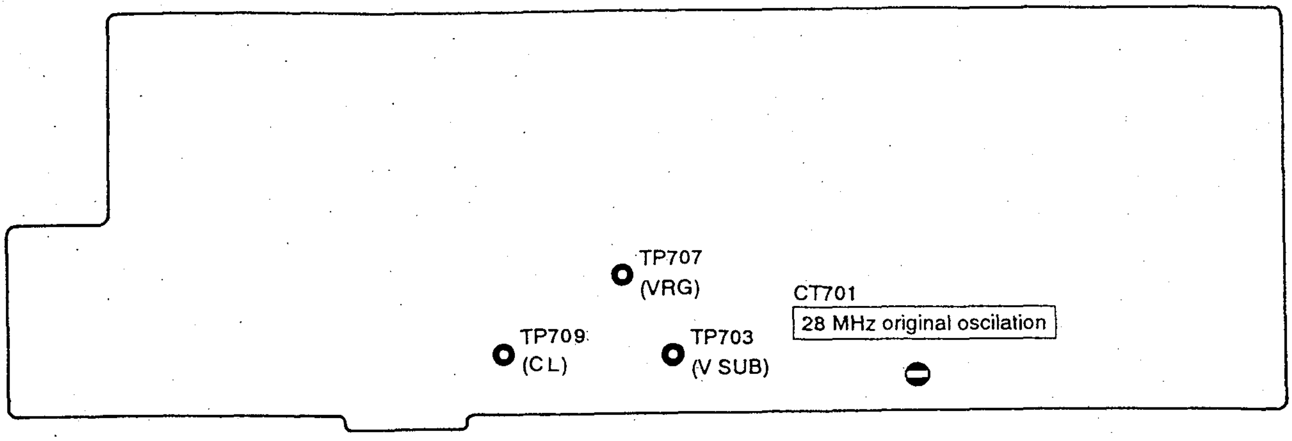
VF-44 BOARD (COMPONENT SIDE)


RV505
Vertical amplitude
RV501
Contrast
RV503
Brightness
RV502
FOCUS

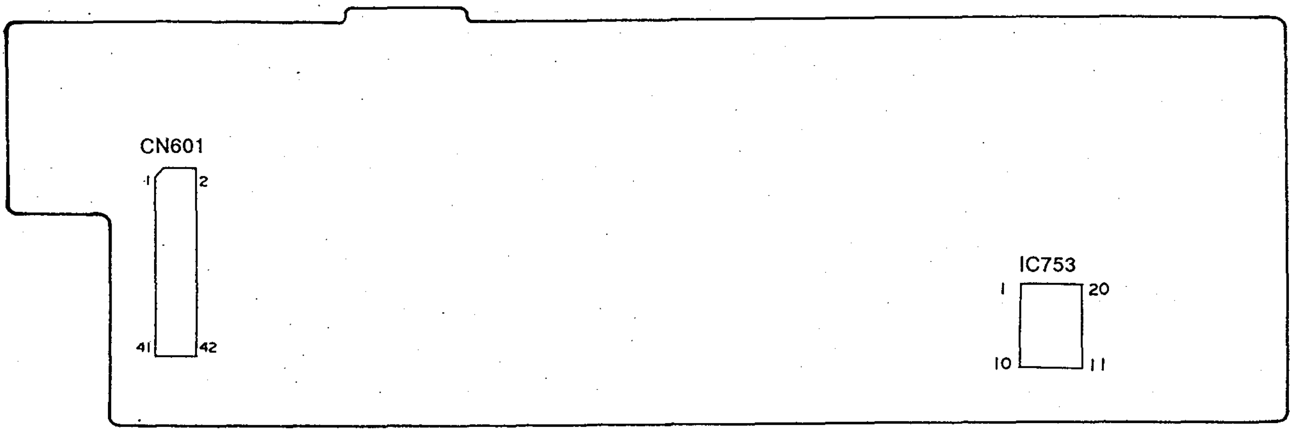
VF-44 BOARD (CONDUCTOR SIDE)


C504
Horizontal amplitide

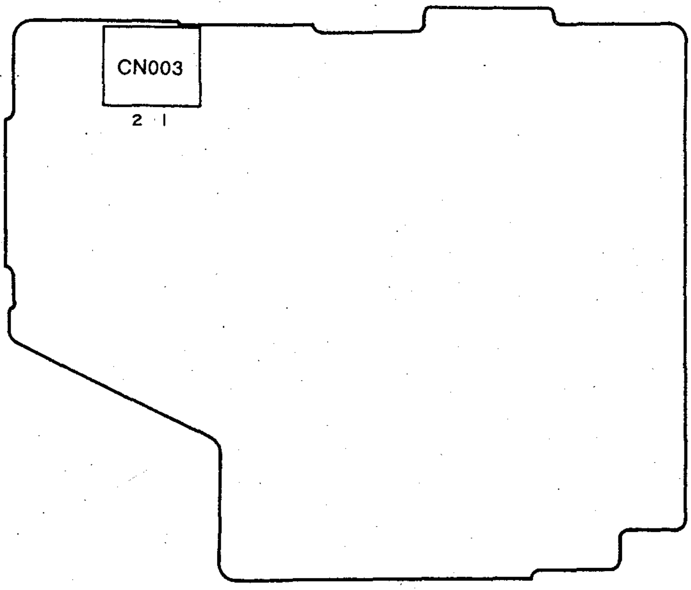
VC-159 BOARD (COMPONENT SIDE)


TP707
(VRG)
CT701
28 MHz original oscilation
TP709
(CL)
TP703
(V SUB)

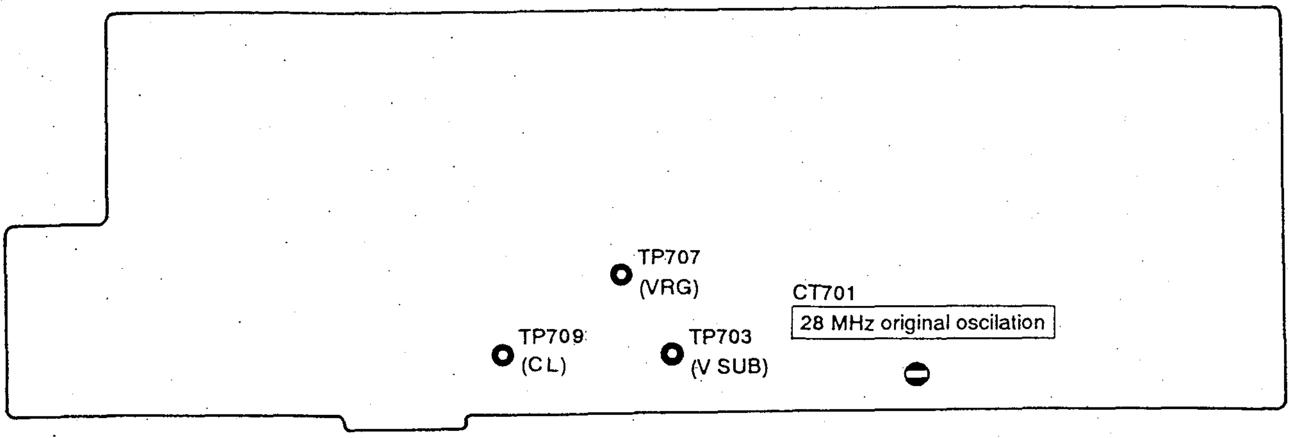
VC-159 BOARD (CONDUCTOR SIDE)


CN601
1
2
41
42
IC753
1
20
10
11

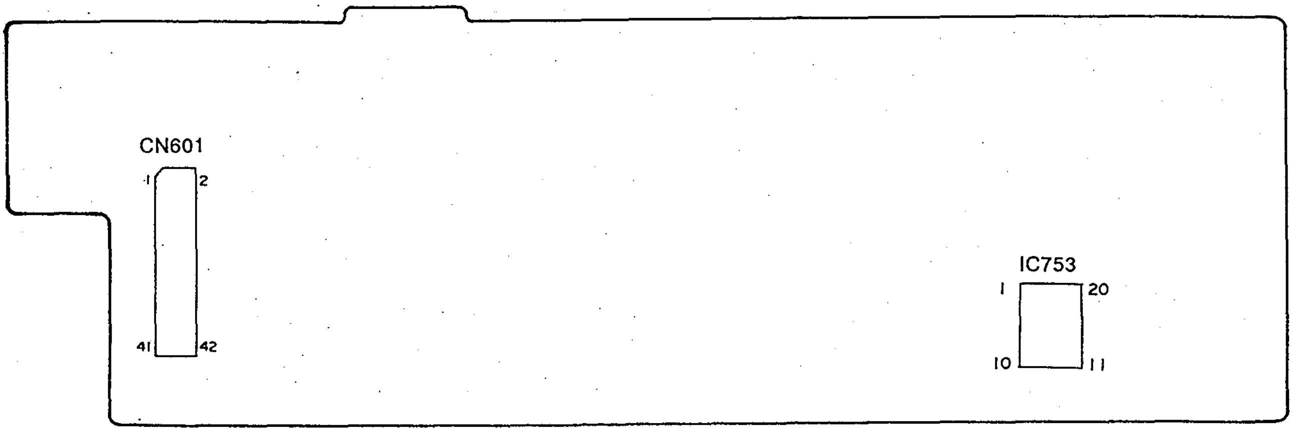
MA-230 BOARD (COMPONENT SIDE)



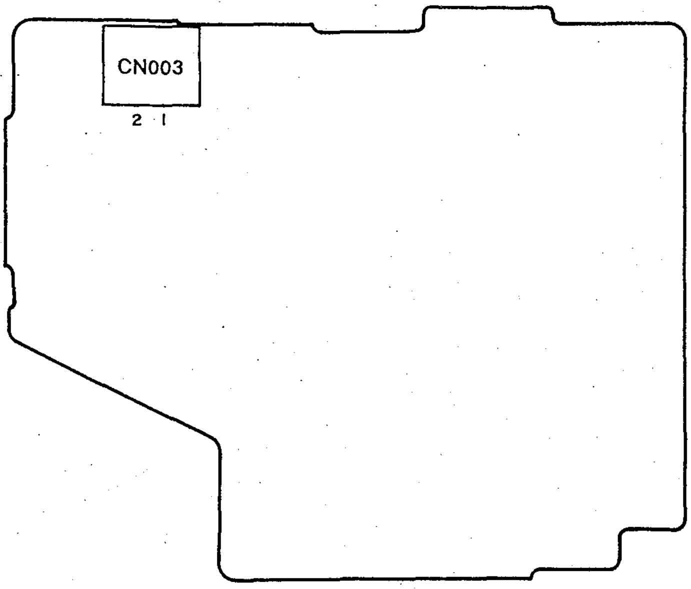
VC-159 BOARD (COMPONENT SIDE)


TP707
(VRG)
CT701
28 MHz original oscilation
TP709
(CL)
TP703
(V SUB)

VC-159 BOARD (CONDUCTOR SIDE)


CN601
1
2
41
42
IC753
1
20
10
11

MA-230 BOARD (COMPONENT SIDE)



7-2. MECHANICAL SECTION ADJUSTMENTS

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume-"8 mm Video Mechanism Adjustment Manual IV A Mechanism ".

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to "2. DISASSEMBLY" and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Set data: 01 to page: 1, address: 00.
6) Set data: 01 to page: D, address: 02, and press the PAUSE button of the adjusting remote commander.
7) Set data: 04 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.

By carrying out the above procedure, the unit can be operated without loading a cassette.
Be sure to carry out "Processing after Operations" after checking the operations.
Set the data of page: D, address: 03 to the following if the sensor ineffective mode, forced VTR power supply ON mode or forced camera power supply ON mode are to be used together.

Forced VTR power supply ON mode·········06
Forced camera power supply ON mode······05

[Processing after Operations]

1) Set data: 01 to page: 1, address: 00.
2) Set data: 00 to page D, address: 02, and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: D, address: 03, and press the PAUSE button of the adjusting remote commander.
4) Set data: 00 to page: 1, address: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the remote terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 1, address: 00, and set data: 01.
5) Select page: D, address: 02, and set data: 03.
   (Perform "Processing after operations" after completing adjustments.)
6) Connect the oscilloscope.
   Channel 1-Pin ③ of CN102 of VS-123 board
   External trigger-Pin ④ of CN102 of VS-123 board
   (Connect the oscilloscope via the measuring pin tool for the video section (J-6082-140-A).)
7) Playback the alignment tape (WR5-1CP) for tracking.
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate 8 mm Video Mechanical Adjustment Manual IV (A Mechanism).
9) Perform "Processing after operations", after completing adjustments.

CN102 of VS-123 board

1	PB 'CH RF
2	PB PCM RF
3	PB RF
4	RF SWP
5	RP GND
6	REC 2

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 1, address: 00, and set data: 01.
3) Select page: D, address: 02, and set data: 00.
4) Press the PAUSE button of the adjusting remote commander.
5) Remove the power supply from the unit.

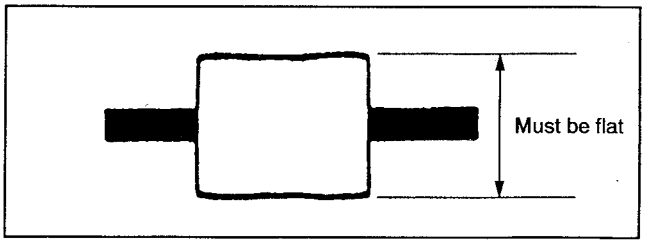


Fig. 7-2-1.

7-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 7–54.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape
    For tracking adjustment (WR5-1CP)
        Part Code: 8-967-995-07
    For video frequency characteristics adjustment (WR5-6C)
        Part Code: 8-967-995-17
    For checking operations
    (WR5-4CL)[Note 1]
        Part Code: 8-967-995-56
    (WR5-5NCP)[Note 2]
        Part Code: 8-967-995-47
    Note: The following alignment tapes can also be used.
        1) WR5-3CL (8-967-995-36)
        2) WR5-4CSP (8-967-995-46)
12) Remote commander for adjustment (J-6082-053-A)
13) VC-159 board extension cord (42P, 0.8 mm)
        Part Code: J-6082-285-A
14) Control switch block (FK board) extension cord (9P, 0.8 mm)
        Part Code: J-6082-288-A
15) Control switch block (CK board) extension cord (18P, 0.8 mm)
        Part Code: J-6082-289-A

3-1-2. Adjusting Precautions

1) The adjustment for this unit is performed using the camera input.
   When using the camera input, set the power supply switch to "CAMERA" or set the "Forcible camera power supply ON mode" using the adjusting remote commander (Note 1).
   After completing adjustments, be sure to exit the "forcible camera power supply ON mode" (Note 3).
2) The F panel block (microphone) is not used for video adjustments. Disconnect the following connector in these adjustments.
   1. CN003 of the MA-230 board (2P, 1.5 mm)
3) MA-230 board is required only for audio adjustments. When not using it, disconnect the following connector.
   1. CN402 of the AU-182 board (8P, 0.8 mm)
4) The view finder (VF-44 board) is not used for video adjustments. Disconnect the following connector in these adjustments.
   1. CN206 of the VS-123 board (6P, 0.5 mm)
5) The cabinet (R) (CK board: Power supply switch, camera function switch) need not be connected if the "forcible VTR power supply ON mode" or "forcible camera power supply ON mode" is set. In this case, disconnect the following connectors (Note 2).
   1. CN503 of the VS-123 board (18P, 0.8 mm)
   2. CN101 of the ZB-2 board (4P, 0.8 mm)
   However, as disconnecting these connectors means disconnecting the 3V lithium power supply, data set by the user such as the date, time, and menu will be lost. After completing the adjustments, set these data again, and be sure to exit the "forcible VTR power supply ON mode" or "forcible camera power supply ON mode". (Note 3)
   When connecting the cabinet (R) using the extension cord, use the following type.
   1. J-6082-289-A (18P, 0.8 mm)
6) The lens block and VC-159 board are not used for video adjustments. Disconnect the following connectors in these adjustments.
   1. CN203 of the VS-123 board (42P, 0.8 mm)
   Connect the following when removing the VC-159 board.
   1. Connect Pin ㉒ (REG H) and Pin ⑦ (D3.6V) of CN203 of the VS-123 board with a jumper wire.
   When connecting the VC-159 board using the extension cord, use the following type.
   1. J-6082-285-A (42P, 0.8 mm)

7) The audio board (AU-182 board) is required only for audio adjustments. When not using it, disconnect the following connector.
   1. CN202 of the VS-123 board (24P, 0.8 mm)
8) When opening the VS-123 board, disconnect the following connectors.
   1. CN502 of the VS-123 board (9P, 0.8 mm)

   The VTR function keys will not work. Use the remote commander to perform operations other than EJECT.
   When connecting the FK board and CN502 of VS-123 board using the extension cord, use the following type.
   1. J-6082-288-A (9P, 0.8 mm)

Note 1: Setting the "forcible camera power supply ON mode (camera input mode)"
1) Set data: 01 to page: 1, address: 00.
2) Set data: 01 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

Note 2: Setting the "forcible VTR power supply ON mode
1) Set data: 01 to page: 1, address: 00.
2) Set data: 02 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.

By performing the above, the VTR can be operated with the cabinet (R) removed. After completing adjustments, be sure to exit the "forcible power supply ON mode".

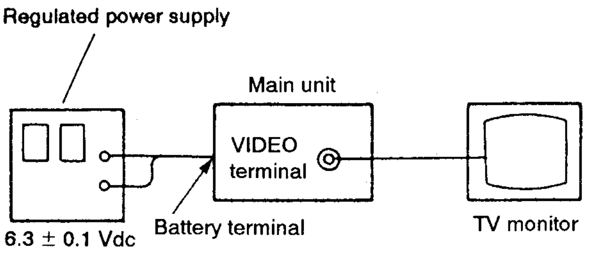
Note 3: Exiting the "forcible power supply ON mode"
1) Set data: 00 to page: 1, address: 00.
2) Set data: 00 to page: D, address: 03 and press the PAUSE button of the adjusting remote commander.
3) Set data: 00 to page: 1, address: 00.

3-1-3. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 7-3-1.

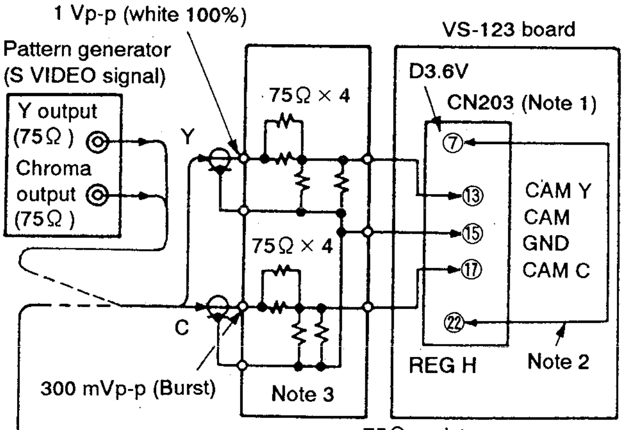
Note 1: When adjustments are performed with the S video output terminal VTR as the signal source, the efficiencies of the unit may be affected by VTR. It is recommendet that a pattern generator with a Y/C separation output terminal be used as much as possible.

Connecting the TV monitor and regulated power supply


Regulated power supply
Main unit
VIDEO terminal
Battery terminal
6.3 ± 0.1 Vdc
TV monitor

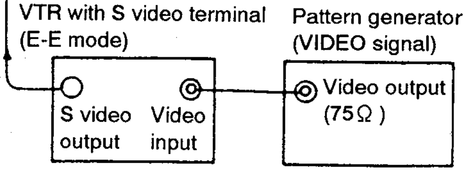
Connecting the pattern generator

[CAMERA Input]
Set the power supply switch to "CAMERA" or set the "forcible camera power supply ON mode" using the adjusting remote commander.
- When the pattern generator has a Y/C separation output terminal


1 Vp-p (white 100%)
Pattern generator (S VIDEO signal)
Y output (75Ω)
Chroma output (75Ω)
Y
C
75Ω × 4
75Ω × 4
300 mVp-p (Burst)
Note 3
VS-123 board
D3.6V
CN203 (Note 1)
⑦
⑬
⑮
⑰
㉒
CAM Y
CAM GND
CAM C
REG H
Note 2

75Ω resistor
(Parts cord: 1-247-804-11)

- When the pattern generator has no Y/C separation output terminal


VTR with S video terminal (E-E mode)
S video output
Video input
Pattern generator (VIDEO signal)
Video output (75Ω)

Note 1: Remove the VC-159 board.
Note 2: Connect Pins ⑦ and ㉒ of CN203 with the jumper wire.
Note 3: The chroma signal input is not required for some adjustments.

Fig. 7-3-1.

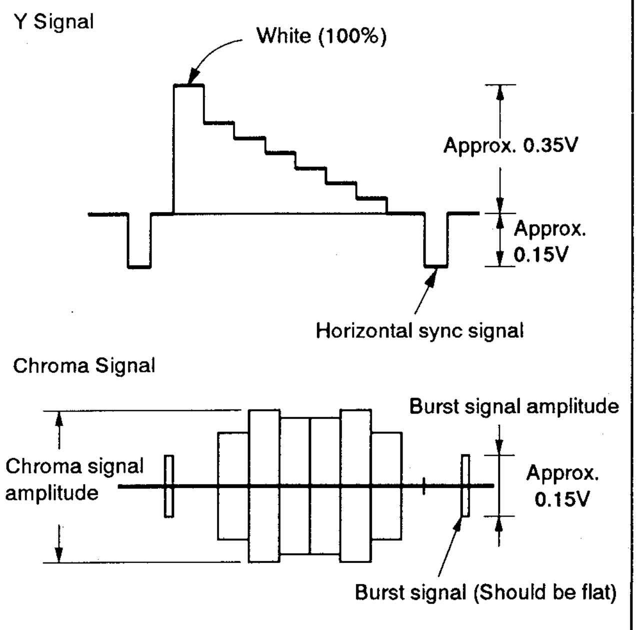
3-1-4. Checking the Input Signals

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjusting the VTR section, the video output signal must satisfy the given specifications.

1. S VIDEO signal

Connect the oscilloscope to Pin ⑬ of CN203 on VS-123 board, and check that the sync signal of the Y signal is approximately 0.15 Vp-p and that the amplitude of the video section is approximately 0.35 Vp-p. (When a VTR with the S VIDEO output terminal is used, also check that the chroma signal and burst signal have not remained.) Connect the oscilloscope to Pin ⑰ of CN203 on VS-123 board, and check that the burst signal amplitude of the chroma signal is approximately 0.15 Vp-p and flat, and that the amplitude ratio of the burst signal to the chroma signal is 0.30 : 0.66. The Y and chroma signals used in the adjustment are shown in Fig. 7-3-2.

Note: Be sure to check in the recording mode.


Y Signal
White (100%)
Approx. 0.35V
Approx. 0.15V
Horizontal sync signal
Chroma Signal
Burst signal amplitude
Chroma signal amplitude
Approx. 0.15V
Burst signal (Should be flat)

Burst amplitude: Chroma amplitude=0.30:0.66

Fig. 7-3-2. Color bar signal of pattern generator

2. VIDEO signal

Connect the oscilloscope to the video terminal, and check that the sync signal amplitude of the video signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V, the amplitude of the burst signal is approximately 0.3V and flat, and that the level ratio of the burst signal to the "red" signal is 0.30 : 0.66.

The video signal (color bar) used in the adjustment is shown in Fig. 7-3-3.

Note: Be sure to check in the record mode.

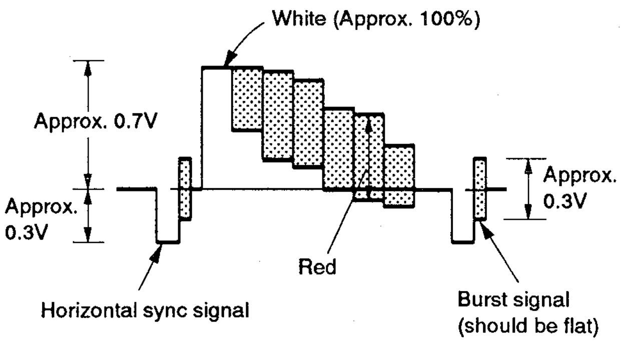

White (Approx. 100%)
Approx. 0.7V
Approx. 0.3V
Approx. 0.3V
Red
Horizontal sync signal
Burst signal (should be flat)

Fig. 7-3-3. Color Bar Signal of Pattern Generator

3-1-5. Alignment Tape

The following table lists alignment tapes which are available. Use the tape specified in the signal column for each adjustment. If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Recording mode	Tape type	Tape speed	Usage
Tracking WR5-1CP	Normal	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-6C	Normal	MP	LP	Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP	Normal	MP	SP	Checking operations
Operation check (LP mode) WR5-4CL	Normal	MP	LP	

Tape type

MP	Particle type metal tape
ME	Evaporated type metal tape

Table 7-3-1.

Fig. 7-3-4. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the video output terminal (Terminated at 75 Ω)

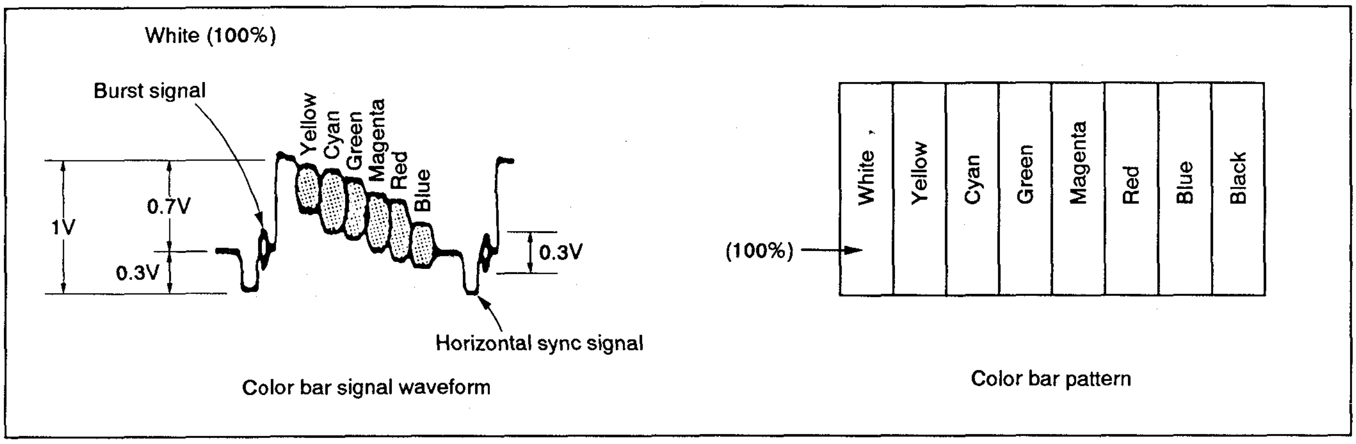

White (100%)
Burst signal
Yellow
Cyan
Green
Magenta
Red
Blue
1V
0.7V
0.3V
0.3V
Horizontal sync signal
Color bar signal waveform
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black
Color bar pattern

Fig. 7-3-4. Color Bar Signals of the Alignment Tape

3-1-6. Output Level and Impedance

Video output	Phono-jack, 1 Vp-p, 75Ω , unbalanced, sync negative
Audio output	Phono-jack, –7.5 dBs, (at load impedance 47 kΩ) impedance less than 2.2 kΩ

3-1-7. Service Mode

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) Return data of the address: 00 on page: 1 to 00. And when data on page: 2 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Set data: 01 to page: 1, address: 00, before setting the data.

Page D	Address 02

Data	Function
00	Normal
01	Test mode 1 Various emergency prohibitions and releases Drum, capstan, loading motor, reel, tape top and end, DEW SP/LP automatic discrimination prohibition, manual switching, 5 minutes pause release prohibition Power off prohibition/release by battery end

Page D	Address 03

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera + VTR power ON

* For page D, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (6.3 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander.

2. Emergency code

Fault (error) symptoms can be checked.

Page D	Address E4

Last emergency code
……Last error code generated (This data will be renewed each time an error occurs.)

Page D	Address E8

2nd emergency code
……2nd error code generated

Page D	Address EC

First emergency code
……First error code generated

* Be sure to rewrite the data of addresses E4, E8 and EC to 00 after repairs/adjustments.

* When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

Code	Error Condition
00	No error
01	Loading motor error
02	Reel error during unloading
03	Reel errors at other times
04	Capstan error
05	FG error during drum start up
06	PG error during drum start up
07	FG error during normal drum conditions
08	PG error during normal drum conditions
09	Phase error during normal drum conditions

3. Emergency mode

The operation mode can be checked during faults.

Page D	Address E5

Last emergency mode
······The operation mode when the last error is generated
(This data will be renewed each time an error occurs.)

Page D	Address E9

2nd emergency mode
······The operation mode when the 2nd error is generated

Page D	Address ED

First emergency mode
······The operation mode when the first error is generated

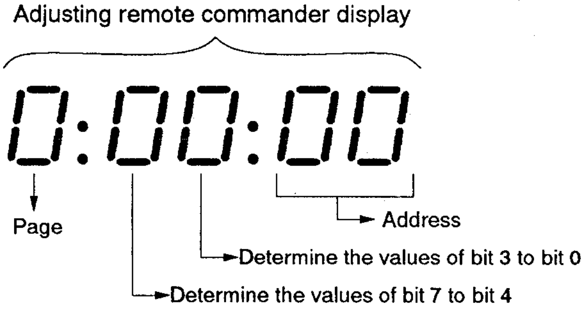
* Be sure to rewrite the data of addresses E5, E9 and ED to 00 after repairs/adjustments.

* When rewriting the data, be sure to press the PAUSE button of the adjusting remote commander after setting the data.

Code	Error Conditions
00	BEFOR INITIALIZE
01	EJECTED
02	NORMAL STOP
03	FF
04	NORMAL REC
06	NORMAL PB
07	PB PAUSE
12	LOADING
14	REC PAUSE
26	X1
27	1/5 SLOW
31	UNLOADING
46	CUE
56	REVIEW
62	STOP TAPE END
66	X2
67	FRAME
72	STOP TAPE TOP
83	REWIND
85	REC REVIEW (+)
95	REC REVIEW (–)
97	–PB PAUSE
A2	EMERGENCY LOADING
A5	EDIT SEARCH (+)
B1	EMERGENCY UNLOADING
B2	STOP EMERGENCY 1
B5	EDIT SEARCH (–)
C2	STOP EMERGENCY 2
E2	STOP NO CASSETTE
F5	EDIT PAUSE

4. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is "1" or "0".


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 to bit 0
Determine the values of bit 7 to bit 4

Remote controller display	Bit value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A(A)	1	0	1	0
B(b)	1	0	1	1
C(c)	1	1	0	0
D(d)	1	1	0	1
Ⓑ→ E(E)	1	1	1	0
F(F)	1	1	1	1

(Example) If the remote commander display data is "8E", bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

5. Battery voltage check

Page 2	Address 49

Display Data	Battery Voltage
F0	Approx. 10.6 Vdc
E0	Approx. 9.9 Vdc
D0	Approx. 9.2 Vdc
C0	Approx. 8.5 Vdc
B0	Approx. 7.8 Vdc
A0	Approx. 7.1 Vdc
90	Approx. 6.4 Vdc
80	Approx. 5.7 Vdc
70	Approx. 5.0 Vdc

Using method:

Order	Page	Address	Data	Procedure
1	2	00	01	Preparation
2	2	49		The battery voltage can be discriminated by the display data.

* Voltage measurement accuracy is approx. ± 10%.

6. Mechanism controller input/output check

Page 2	Address 83

Bit	IN/OUT Signal	Condition
0		
1	E/L DET	"1"=Hi8, "0"=Normal
2	SP/LP DET	"1"=SP, "0"=LP
3	CLOG DET	"1"=Clog detected, "0"=Others
4	REC PROOF	"1"=Recording prohibited, "0"=Recording possible
5	TAPE PREEND	"1"=Tape preend, "0"=Others
6	DEW DET	"0"=Condensation occured, "1"=Others
7	CASSETTE IN	"0"=No cassette

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparation
2	2	83		The condition of each input signal can be discriminated by differentiating the bit value of the display data.

Page 2	Address 84

Bit	IN/OUT Signal	Condition
0	VA PB MODE	"1"=PB, "0"=REC
1	RP PB MODE	"1"=PB, "0"=REC
2	JOG	"1"=Variable speed playback, "0"=Others
3	ME/MP SW	"1"=ME tape, "0"=Other tape
4	Hi8 MP SW	"1"=Hi8 MP tape, "0"=Other tape
5	SERVO OPERATION	"1"=SP mode, "0"=LP mode
6	VIDEO MUTE	"1"=Mute, "0"=Video output
7	AUDIO MUTE	"1"=Mute, "0"=Audio output

Using method:

Order	Page	Address	Data	Procedure
1	2	00	00	Preparation
2	2	84		The condition of each signal can be discriminated by differentiating the bit value of the display data.

7. Mode switch and CC DOWN switch check

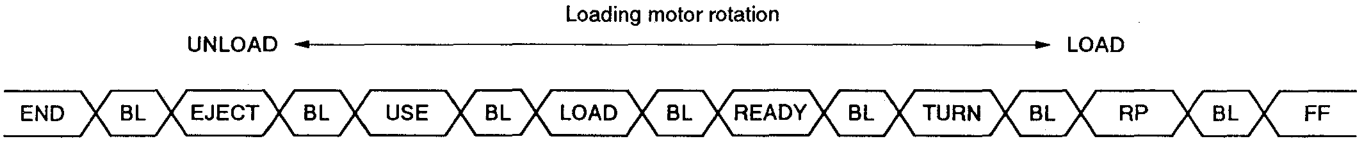
The mode switch position (mechanical section condition) can be checked.

Page 3	Address E9

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
MSW 2	MSW 1	MSW 0	CC DOWN				

				DATA	POSITION	FUNCTION
0	0	0	0/1	E*/F*	BL	Interval of each position
0	1	1	1	7*	END	FULL END processing (T side lock removal)
0	0	1	1	3*	EJECT	Cassette compartment ejection
1	0	1	1	B*	USE	EJECTED (Unskate end)
0	0	1	0	2*	LOAD	LOADING (Skate in)
1	0	0	0	8*	READY	NORMAL STOP position
1	1	0	0	C*	TURN	OFF of pinch roller only with STOP↔FF/REW (oscillating position)
0	1	0	0	4*	RP	PB, REC, RVS, REV, CUE
0	0	0	0	0*	FF	FF/REW

*: Don't care


Loading motor rotation
UNLOAD
LOAD
END
BL
EJECT
BL
USE
BL
LOAD
BL
READY
BL
TURN
BL
RP
BL
FF

Using method:

Order	Page	Address	Data	Procedure
1	3	00	00	Preparation
2	3	E9		The mode switch position and CC DOWN switch condition can be discriminated by the display data.

8. Tape top/end sensor check

Page 3	Address 0A

Display Data	Tape Top/End Sensor Condition
00	Tape present (Middle of tape)
01	Tape end
10	Tape top
11	No tape

Tape end sensor condition
Tape top sensor condition

"0"=Non active (Not receiving light)
"1"=Active (Receiving light)

Using method:

Order	Page	Address	Data	Procedure
1	3	00	02	Preparation
2	3	0E	10	Preparation
3	3	0A		The condition of the tape top/end sensor can be discriminated by the display data.

9. Page D address list

Note 1: The adjustment data initial value is the data input before performing video section adjustments (Page D) if the Page D data has been erased due to some reason.

Note 2: The data written in the adjustment data memo column are fixed.
After adjusting, check that these data have not been rewritten by mistake.

Note 3: In some case, data have been input to the page D address 91 to E3 and F0 to FF. This has no relation to the adjustment.

Note 4: ⟨ ⟩: E, Australian, Rusian model
No mark: Other models

Address	Adjustment data	
	Initial value	Memo column
00		
01		
02	00	00
03	00	00
04	80	
05	0B	
06	66	
07	7F	
08	84	
09	8A	
0A	8E	
0B	00	00
0C		
0D		
0E		
0F		
10	00	
11	00	00
12	00	
13	00	
14	B6	B6
15	98	98
16	01	01
17 Note 4	06 ⟨07⟩	06 ⟨07⟩
18	05	05
19	40	40
1A Note 4	48 ⟨68⟩	48 ⟨68⟩
1B	20	20
1C	00	00
1D	00	00
1E		
1F		

Table 7-3-2. (1)

Address	Adjustment data	
	Initial value	Memo column
20		
21		
22		
23	00	00
24	33	33
25	33	33
26	28	28
27	28	28
28	A8	A8
29	A8	A8
2A	AC	AC
2B	AC	AC
2C	A8	A8
2D	A8	A8
2E	AC	AC
2F	AC	AC
30	E5	E5
31	E5	E5
32	E5	
33	E5	
34	E5	E5
35	E5	E5
36	E5	
37	E5	
38	E6	
39	ED	
3A	E6	
3B	ED	
3C		
3D		
3E		
3F		
40	FF	FF
41	FF	FF
42	B9	
43	B9	
44	FF	FF
45	FF	FF
46	B9	
47	B9	
48		
49		

Table 7-3-2. (2)

Address	Adjustment data	
	Initial value	Memo column
4A		
4B		
4C		
4D		
4E		
4F		
50	A2	A2
51	A1	A1
52		
53		
54	00	00
55	00	00
56	90	90
57	00	00
58	00	00
59	75	75
5A	DF	DF
5B	DF	DF
5C	DF	DF
5D	DF	DF
5E	DF	
5F	DF	DF
60	DF	DF
61	DF	DF
62	DF	DF
63	DF	
64		
65		
66		
67		
68		
69	DF	DF
6A	DF	DF
6B	DF	DF
6C	DF	DF
6D	DF	DF
6E		
6F		
70	A4	
71	85	
72	B0	B0
73	B0	B0

Table 7-3-2. (3)

Address	Adjustment data	
	Initial value	Memo column
74	FF	FF
75	BB	
76	FF	FF
77	97	
78	00	00
79	00	00
7A	7C	7C
7B	7C	7C
7C	00	00
7D	00	00
7E	60	60
7F	60	60
80	99	
81	99	
82	A5	
83	A9	
84		
85	69	69
86	00	00
87	69	
88	BA	BA
89	BA	BA
8A	00	00
8B	48	48
8C	AF	AF
8D	AF	AF
8E	AF	
8F	AF	
90	60	60
91 to E3		
E4	00	
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	

Table 7-3-2. (4)

3-2. POWER SYSTEM ADJUSTMENTS

1. Power Voltage Check (DD-76 board)

Mode	Camera record
Subject	Arbitrary
Measuring Instrument	Digital voltmeter
D5V check	
Measurement Point	Pin ㉙ of CN901
Specified Value	4.9 ± 0.1 Vdc
EVF5V check	
Measurement Point	Pin ㊴ of CN901
Specified Value	4.9 ± 0.1 Vdc
VID 5V check	
Measurement Point	Pins ㉓ and ㉔ of CN901
Specified Value	4.9 ± 0.1 Vdc
AU 5V check	
Measurement Point	Pin ㉟ of CN901
Specified Value	4.9 ± 0.1 Vdc
RP 5V check	
Measurement Point	Pin ⑳ of CN901
Specified Value	4.9 ± 0.1 Vdc
CAM5V check	
Measurement Point	Pins ㉕ and ㉖ of CN901
Specified Value	4.85 ± 0.1 Vdc
SS 3.6V check	
Measurement Point	Pin ㉝ of CN901
Specified Value	3.6 ± 0.1 Vdc
D3.6V check	
Measurement Point	Pins ㉑ and ㉒ of CN901
Specified Value	3.6 ± 0.1 Vdc
CAM 15V check	
Measurement Point	Pin ㉗ of CN901
Specified Value	15 ± 0.3 Vdc
CAM –8.5V check	
Measurement Point	Pin ㉛ of CN901
Specified Value	$-8.5^{+0.25}_{-0.4}$ Vdc
MT 5V check	
Measurement Point	Pins ⑨, ⑱ and ⑲ of CN901
Specified Value	5.0 ± 0.1 Vdc

3-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

1. Page D Initial Value Input

If the page D data has been erased due to some cause, input the page D initial value before performing adjustments. For details on the initial value, refer to "Page D address list" in "3-1-7. Service Mode".

Mode	E-E
Signal	Arbitrary
Adjustment Page	D
Adjustment Address	00 to 90

Input method:

1) Set data: 01 to page: 1, address: 00.
2) Select page D, and input the initial value to each address. (After setting the data (initial value), be sure to press the PAUSE button of the adjusting remote commander before changing the address.)

2. Battery End Adjustment

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera record
Signal	Arbitrary
Measurement Point	LCD display of the adjusting remote control unit
Measuring Instrument	
Adjustment Page	D
Specified Value	06, 07, 08, 09, 0A

Connection:

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 7-3-5.

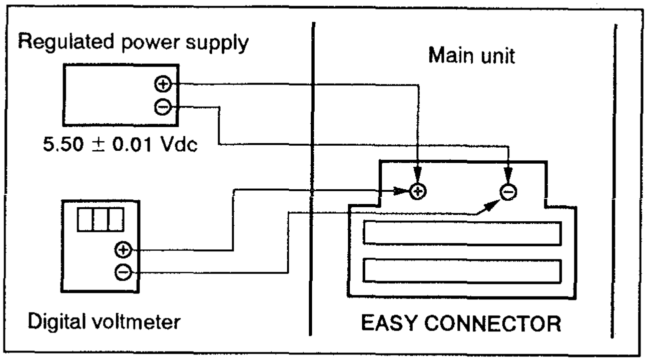


Fig. 7-3-5.

Adjusting method:

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.3 ± 0.1 Vdc.
2) Set data: 01 to page: 1, address: 00.
3) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.50 ± 0.01 Vdc.
4) Set data: 01 to page: 2, address: 00.
5) Select page: 2, address: 49, read the adjusting remote commander display data, and this data named D6.
6) Set data D6 to page: D, address: 06, and press the PAUSE button of the adjusting remote commander.
7) Convert D6 to decimal notation, and obtain D6′. (Refer to Table 7-1-3. "Hexadecimal notation–decimal notation conversion table")
8) Calculate D7′, D8′, D9′ and DA′ using following equations (decimal notation calculation).
   D7′=D6′+3
   D8′=D6′+8
   D9′=D6′+14
   DA′=D6′+18
9) Convert D7′, D8′, D9′ and DA′ to hexadecimal notation, and obtain D7, D8, D9 and DA.
10) Set data: D7′ to page: D, address: 07, and press the PAUSE button of the adjusting remote commander.
11) Set data: D8′ to page: D, address: 08, and press the PAUSE button.
12) Set data: D9′ to page: D, address: 09, and press the PAUSE button.
13) Set data: DA to page: D, address: 0A, and press the PAUSE button.
14) Perform "Battery Down Check".

3. Battery Down Check

Mode	Camera record
Subject	Arbitrary

Connection

1) Connect the regulated power supply and the digital voltmeter as shown in Fig. 7-3-5.

Checking method:

Remove the adjusting remote commander, and perform the following check. If the check is not satisfied, perform from the beginning again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display becomes 6.3 ± 0.1 Vdc.
2) Set to the camera recording mode.
3) Check that the 🔋 mark on the EVF (viewfinder) display is not lighted up. (TALLY lamp lights up).
4) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.53 ± 0.01 Vdc.
5) Check that the 🔋 mark on the EVF display and the TALLY lamp blinks every second.
6) Decrease the the output voltage of the regulated power supply so that the digital voltmeter display becomes 5.47 ± 0.01 Vdc.
7) Check that the 🔋 mark on the EVF display and the TALLY lamp are blinking faster.

3-4. SERVO SYSTEM ADJUSTMENTS

1. Switching Position Adjustment (VS-123 board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1CP)
Measurement Point	CH1: Pin ④ of CN102 (RF SWP) CH2: Pin ③ of CN102 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	04, 05
Specified Value	t1=0 ± 10 μsec

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: 0B to page: D, address: 05.
3) Change the data of page: D, address: 05 and minimize "t1". (Coarse adjustment)
4) Change the data of page: D, address: 04, and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjusting remote commander.

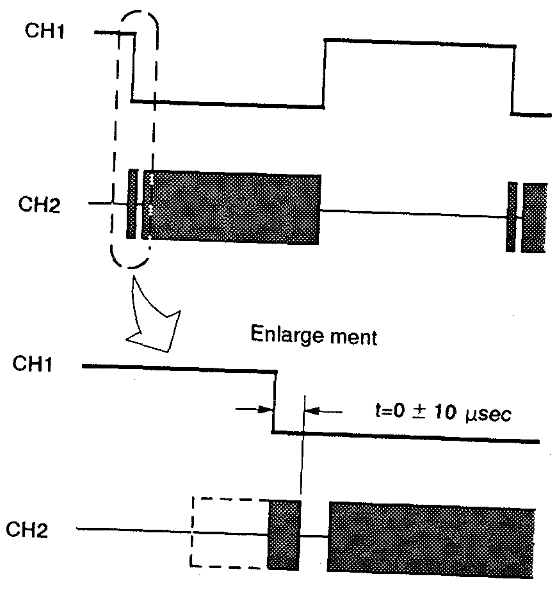


Fig. 7-3-6.

3-5. VIDEO ADJUSTMENTS

The adjustments of the video system must be performed according to the following adjustment procedure.
The color video signal supplied from the pattern generator is used as the video input signal for adjusting the video system in recording mode. Check that the sync signal and the color burst signal satisfy the specification specified during the adjustment set-up shown in Figs. 7-3-2. and 7-3-3.

[Adjusting procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) VXO oscillation frequency check
4) SYNC AGC level adjustment
5) Comb filter adjustment
6) Emphasis input level adjustment
7) DE EMPH level adjustment
8) PB Y out level adjustment
9) Y FM carrier frequency adjustment
10) Y FM deviation adjustment
11) Chroma emphasis adjustment 1
12) Chroma emphasis adjustment 2
13) Comb filter fine adjustment
14) REC Y level adjustment
15) REC L adjustment
16) REC CHROMA level adjustment
17) REC ATF level check

1. Playback Frequency Characteristic Adjustment (VS-123 board)

Eliminate the differences in the head characteristics of each channel. If there are differences, flickers and over modulation noises will be produced.

Note 1: The adjusting element for CH2 is shown in parentheses [ ].

Mode	Playback
Signal	Alignment tape: For frequency characteristic adjustment (WR5-6C)
Measurement Point	CH1: Pin ③ of CN102 (PB RF) EXT TRIG: Pin ④ of CN102 (RF SWP)
Measuring Instrument	Oscilloscope TRIG SLOPE: +, [–]
Adjustment Page	D
Adjustment Address	5E, [63]
Specified Value	3.58 MHz level: 5.5 MHz level= 4: (3 ± 0.2)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) After memorizing the data of page: D, address: 05, set data: 1A.
3) Press the PAUSE button of the adjusting remote commander.
4) Change the data of address: 5E [63] of page D, and adjust the level ratio of 3.58 MHz and 5.5 MHz of PB RF output waveform to the specified value.
5) Set the data memorized step 2) to Page: D, address: 05, and press the PAUSE button of the adjusting remote commander.

Note 2: After each address adjustment, be sure to press the PAUSE button of the adjusting remote commander and memorize the data.

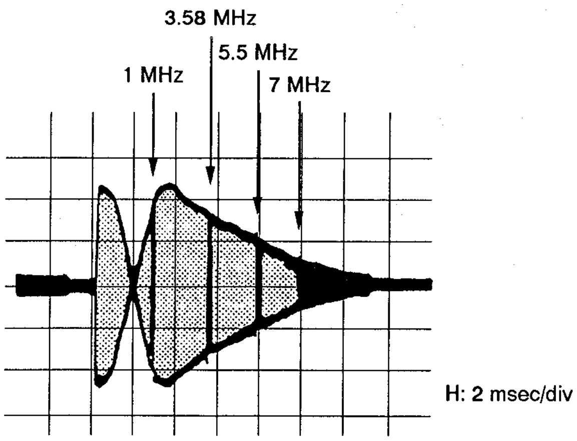


Fig. 7-3-7.

2. Flying Erase Check (VS-123 board)

Mode	Camera record
Signal	Arbitrary
Measurement Point	Pin ⑫ of CN101 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: 8.0 ± 0.5 MHz Voltage: 6.0 ± 1 Vp-p (ME tape) Above 7.0 Vp-p (MP tape)

Checking method:

1) Check that the oscillation frequency and the oscillation voltage satisfieds the specified value.

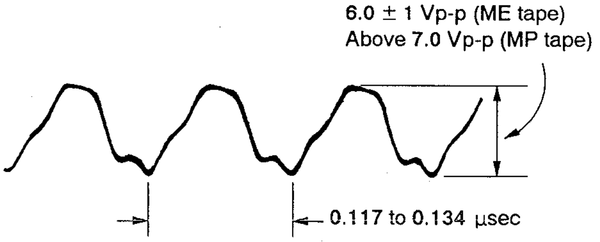


Fig. 7-3-8.

3. VXO Oscillation Frequency Check (VS-123 board)

Mode	Playback
Signal	Color bar
Measurement Point	Pin ㉑ of IC201 (CL227)
Measuring Instrument	Frequency counter
Specified Value	4433619 ± 50 Hz

Note: Connect the frequency counter via a high impedance (approximately 10 MΩ) and low capacity (below 10 pF) buffer.

Adjusting method:

1) Check that the oscillation frequency of pin ㉑ of IC201 is 4433619 ± 50 Hz.

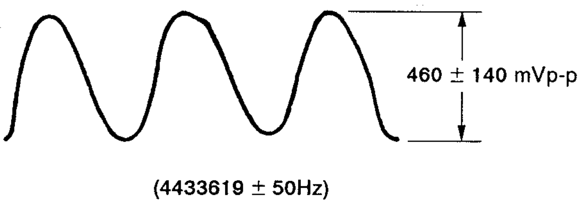


Fig. 7-3-9.

4. SYNC AGC Level Adjustment (VS-123 board)

Adjust so that the Y signal level to be recorded becomes consistent. If it is not consistent, the camera EE image and OA image will be brighter or darker than normal.

Mode	Camera record
Signal	Color bar (Camera input) Note 1
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O) Note 2 (CL298)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	70
Specified Value	A=1.00 ± 0.025V

Note 1: The chroma signal input is not required.

Note 2: Terminate the video out terminal at 75Ω .
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 70, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

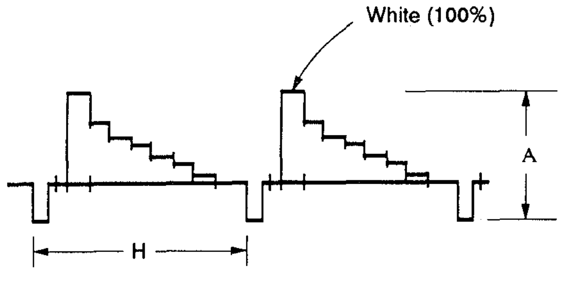
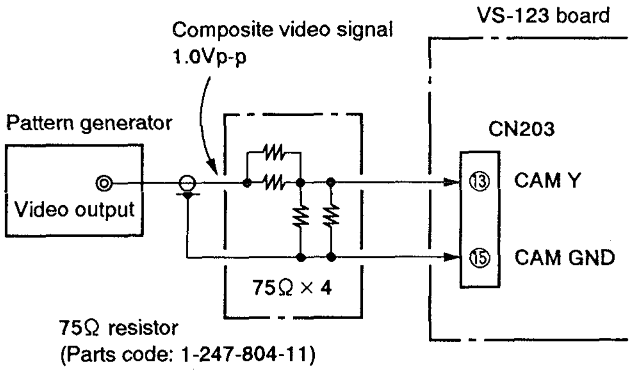


Fig. 7-3-10.

5. Comb Filter Adjustment (VS-123 board)

Mode	Camera record
Signal	Color bar (Note 1)
Measurement Point	Pin ⑭ of IC201 (Y COMB OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV202 (PHASE)
Adjustment Page	D
Adjustment Address	71
Specified Value	Residual chroma component (A) is minimum.

Note 1: Connect the pattern generator of the composite video signal as shown in the following figure.



Adjusting method:

1) Set to the camera record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 10 to the address.
6) After memorizing the data of address: 9D of page: 2, set data: 30 to the address.
7) Change the data of page: D, address: 71, and adjust the residual chroma component (A) to minimum.
8) Adjust RV202 so that the residual chroma component becames minimum.
9) Repeat 8) and 9).
10) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the data memorized at step 7) to address: 9D of page: 2.
2) Set the data memorized at step 6) to address: 9A of page: 2.
3) Set data: 00 to page: 2, address: B0.

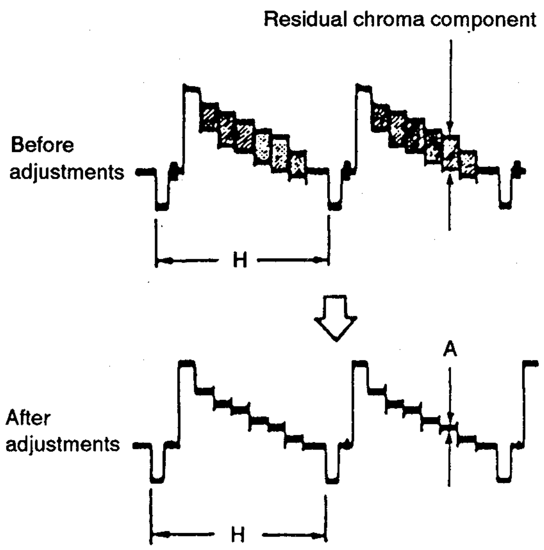

Residual chroma component
Before adjustments
H
A
After adjustments
H

Fig. 7-3-11.

6. Emphasis Input Level Adjustment (VS-123 board)

Y level of emphasis circuit setting. If deviated, this causes too bright or too dark image during play back after recording.

Mode	Camera record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑤ of IC201 (EMPH IN) or Pin ⑤ of IC205 (CL204)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	82
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 82, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

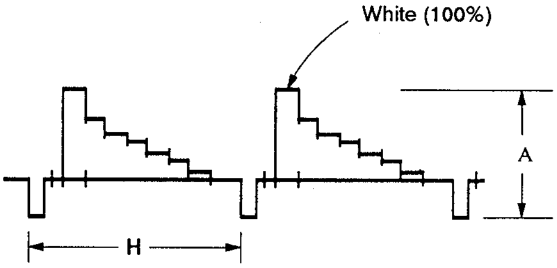

White (100%)
A
H

Fig. 7-3-12.

7. DE EMPH Level Adjustment (VS-123 board)

De-emphasis input level setting. If deviated, this causes excessive brightness or darkness.

Mode	Playback
Signal	Alignment tape: For checking operations Color bar section (WR5-5CSP)
Measurement Point	Pin ㉓ of IC201 (DL IN 1) (CL215)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	87
Specified Value	A=0.50 ± 0.01V

Note 1: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 87, and adjust so that the Y signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Perform "PB Y OUT Level Adjustment".

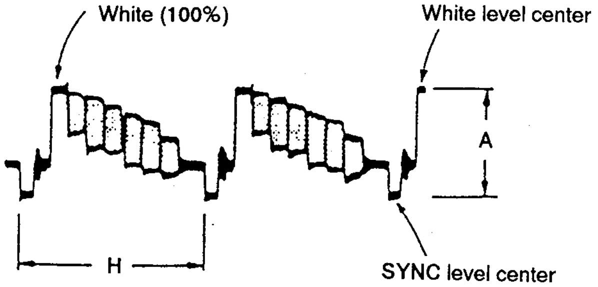


Fig. 7-3-13.

8. PB Y OUT Level Adjustment

PB LINE OUT Y level setting. If deviated, this causes too bright or too dark picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Pin ⑥ of CN201 (VIDEO I/O)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	83
Specified Value	A=1.045 ± 0.05V

Note 1: Terminate the video out terminal at 75Ω.
75Ω resistor (Part code: 1-247-804-11)

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 83, and adjust so that the video signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

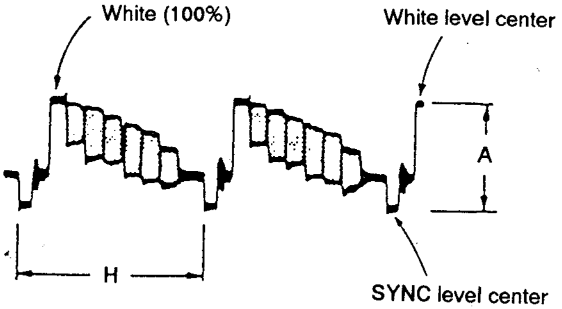


Fig. 7-3-14.

9. Y FM Carrier Frequency Adjustment (VS-123 board)

FM carrier frequency of REC Y setting. If deviated, this caused blurred played back picture or deteriorated resolution.

Mode	Camera record
Signal	No signal (CAMERA input)
Measurement Point	Pin ㊴ of IC201 (Y RF OUT) (CL294)
Measuring Instrument	Frequency counter
Adjustment Page	D
Adjustment Address	75
Specified Value	4.39 ± 0.01 MHz

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 75, and adjust so that the Y FM carrier frequency becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

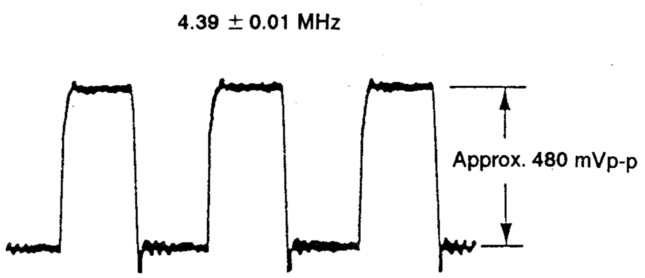


Fig. 7-3-15.

10. Y FM Deviation Adjustment (VS-123 board)

FM deviation of REC Y setting. If deviated, this causes too bright/dark image, or marked occurrence of black picture or deteriorated resolution.

Mode	Camera record and playback
Signal	Color bar (CAMERA input)
Measurement Point	Pin ㉓ of IC201 (DL IN 1) (CL215)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	77
Specified Value	A=0.50 ± 0.01V

Note 1: Check that "Emphasis Input Level Adjustment", have been completed.

Note 2: The chroma signal input is not required.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Record the color bar signal.
3) Playback the recorded signal.
4) Check the playback signal level (A).
   Specification:A=0.50 ± 0.01V
5) If the specification is not satisfied, change the data of page: D, address: 77, and repeat steps 2) to 4).

Playback signal level	Changing the data
When smaller than the specified value	Increase
When bigger than the specified value	Decrease

6) Press the PAUSE button of the adjusting remote commander.
7) Perform "Y FM Carrier Frequency Adjustment".

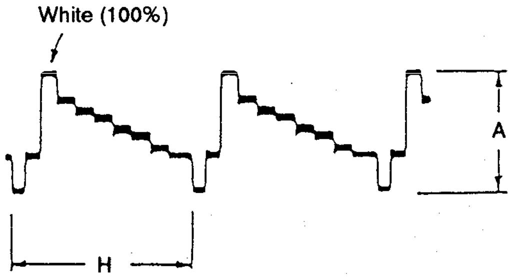


Fig. 7-3-16.

11. Chroma Emphasis Adjustment 1 (VS-123 board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Camera record
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑧ of IC201 (REC C OUT) (CL216)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	80, 81
Specified Value	Minimum f_0 component

Adjusting method:

1) Set to the record mode.
2) Set data: 01 to page: 1, address: 00.
3) Set data: 00 to page: 2, address: 00.
4) Set data: 04 to page: 2, address: B0.
5) After memorizing the data of address: 9A of page: 2, set data: 02 to the address.
6) Change the data of page: D, address: 80, and adjust so that the amplitude of the latter section of the chroma signal (yellow section) becames minimum.
7) Press the PAUSE button of the adjusting remote commander.
8) Set the same data as address: 80 of page: D to address: 81 of page D.
9) Press the PAUSE button of the adjusting remote commander.

Processing after completing adjustments

1) Set the memorized at step 5) to address: 9A of page: 2.
2) Set data: 00 to page: 2, address: B0.

Minimize the amplitude of the latter section of the yellow section.

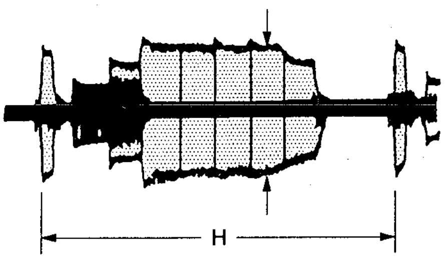


Fig. 7-3-17.

12. Chroma Emphasis Adjustment 2 (VS-123 board)

Emphasis center frequency setting. If deviated, this causes unnatural color.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	D
Adjustment Address	81, 80
Specified Value	The path from the blue luminance point to black luminance point should be a straight line.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 81, and adjust so that the path from the blue luminance point to black luminance point becames a straight line.
3) Press the PAUSE button of the adjusting remote commander.
4) Set the same data as address: 81 of page: D to address: 80 of page: D.
5) Press PAUSE button of the adjusting remote commander.

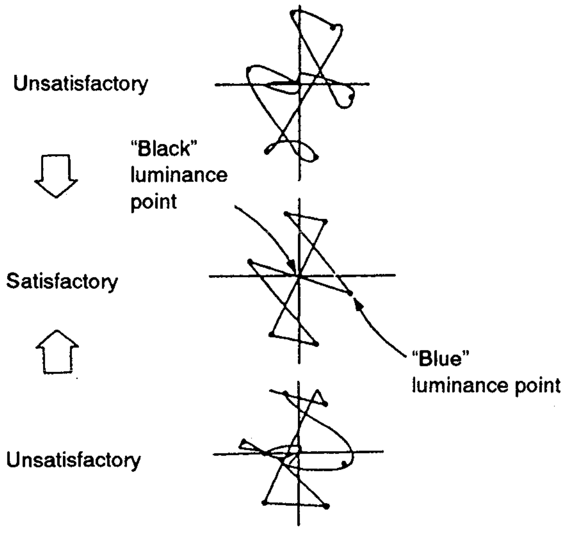


Fig. 7-3-18.

13. Comb Filter Fine Adjustment (VS-123 board)

Set the level and phase of the 2H delayed signal for the comb filter. If deviated, this causes marked occurrence of beets in played back picture.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP) Color bar section
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV202 (PHASE)
Adjustment Page	D
Adjustment Address	71
Specified Value	Minimum color luminance point movement when the "Edit" switch is turned on/off

Note 1: Turn the edit ON/OFF at the menu screen.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Minimize the movements of the color luminance point when the edit is on/off with RV202.
3) Change the data of page: D, address: 71 and minimize the movements of the color luminance point when the edit is on/off
4) Press the PAUSE button of the adjusting remote commander.
5) Repeat steps 2) to 4).

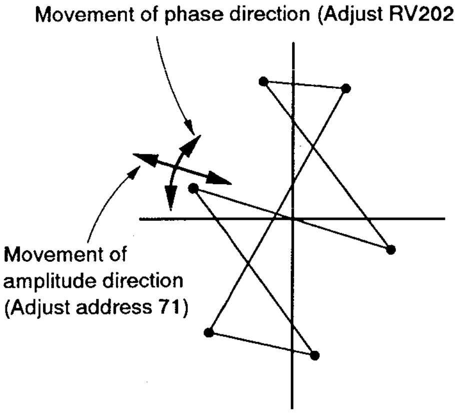

Movement of phase direction (Adjust RV202)
Movement of amplitude direction (Adjust address 71)

Fig. 7-3-19.

14. REC Y Level Adjustment (VS-123 board)

Recording level of luminance signal setting. If deviated, this causes black stretch over modulation noise or color shade.

Mode	Camera record
Signal	No signal (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope Board width limit: 20 MHz
Adjustment Page	D
Adjustment Address	42, 43, 46, 47
Specified Value	A=130 ± 5 mVp-p

Note: Use a normal MP type tape.

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Set data: FF to address: 43 of page: D, and press ths PAUSE button of the adjusting remote commander.
3) Change the data of page: D, address: 47, and adjust so that REC Y level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Set data to address: 42, 43, 46 of page: D as shown in following table.

   (Be sure to press the PAUSE button of the adjusting remote commander after setting each data.)

Address	Data
42	Same data as address: 47
43	Same data as address: 47
46	Same data as address: 47

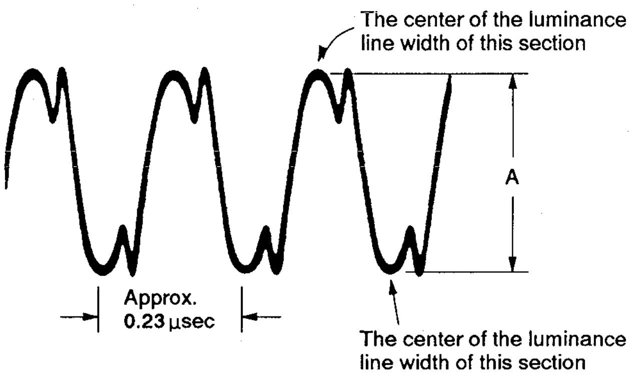

The center of the luminance line width of this section
A
Approx. 0.23 µsec
The center of the luminance line width of this section

Fig. 7-3-20.

15. REC L Adjustment (VS-123 board)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorate, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	Camera record
Signal	No signal (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	38, 39, 3A, 3B
Specified Value	A=8.0 ± 1.0 mVp-p

Note 1: Use a MP type tape.
Note 2: AU-182 board is required for this adjustment.

Connection:
1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor.

Adjusting method:
1) Set data: 01 to page: 1, address: 00.
2) Set data: FF to address: 39 of page: D, and press the PAUSE button of the adjusting remote commander.
3) Change the data of page: D, address: 3B, and adjust so that the REC AFM signal level (A) becomes the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Read the data of page: D, address: 3B, and this data is named D3B.
6) Set data: D3B to address: 39 of page D.
7) Press the PAUSE button of the adjusting remote commander.
8) Convert D3B to decimal notation, and obtain D3B′.
(Refer to Table 7-1-3. "Hexadecimal notation-decimal notation conversion table")
9) Culculate D3A′ using following equation (decimal notation calculation).
D3A′=D3B′−7
10) Convert D3A′ to hexadecimal notation, and obtain D3A.
11) Set data: D3A to address: 3A of page D.
12) Press the PAUSE button of the adjusting remote commander.
13) Set data: D3A to address: 38 of page D.
14) Press the PAUSE button of the adjusting remote commander.
15) Perform "REC CHROMA Level Adjustment".

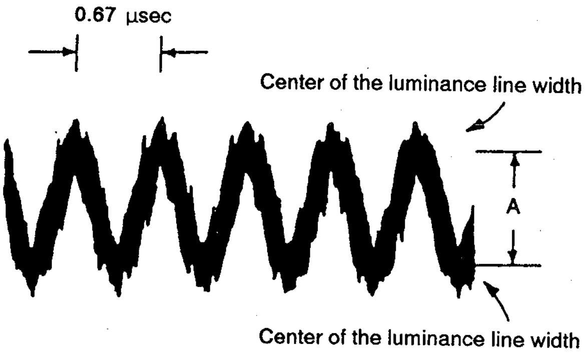

0.67 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 7-3-21.

16. REC CHROMA Level Adjustment (VS-123 board)

Set REC CHROMA signal level. If it is lower than its normal level, chroma signal noise in played back picture will increase. If it is set higher, Y signal noises will increase and white modulation noises will be prodused.

Mode	Camera record (SP)
Signal	Color bar (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	33, 32, 37, 36
Specified Value	A=23 ± 3 mVp-p

Note 1: Use a MP type tape.

Connection:
1) Connect Emitter of Q113 and GND with a jumper wire.
2) Connect Pin ⑤ of IC508 and GND with a 0.01 μF capacitor. (1-101-004-00)
3) Disconnect AU-182 board.

Adjusting method:
1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 33, and adjust so that the REC CHROMA signal level (A) becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Read the data of page: D, address: 33, and set to D33.
5) Set data: D33 to address: 32 of page D.
6) Press the PAUSE button of the adjusting remote commander.
7) Set data: D33 to address: 36 of page D.
8) Press the PAUSE button of the adjusting remote commander.
9) Set data: D33 to address: 37 of page D.
10) Press the PAUSE button of the adjusting remote commander.

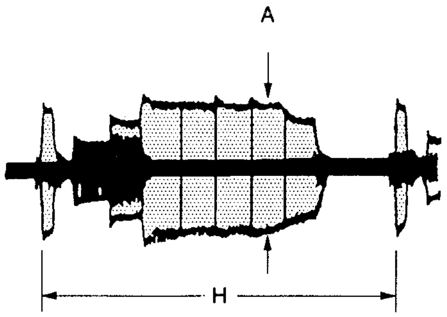


Fig. 7-3-22.

17. REC ATF Level Check (VS-123 board)

Mode	Camera record (SP)
Signal	No signal (CAMERA input)
Measurement Point	Pin ⑥ of CN102 (REC 2)
Measuring Instrument	Oscilloscope
Specified Value	A=7.0 ± 1.5 mVp-p

Note 1: Use a MP type tape.

Connection:
1) Connect Emitter of Q113 and GND with a jumper wire.
2) Disconnect AU-182 board.

Adjusting method:
1) Check that the REC ATF signal level (A) satisfise the specified value.

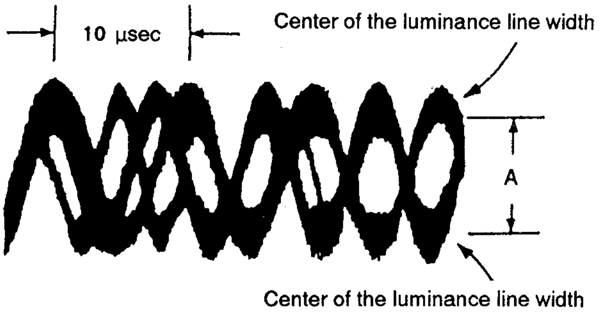
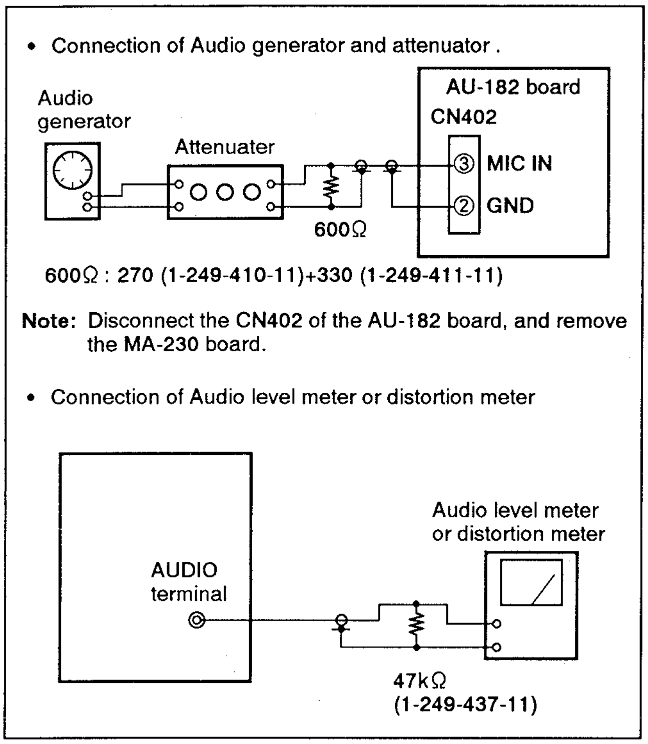

10 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 7-3-23.

3-6. AUDIO SYSTEM ADJUSTMENT

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments as shown in Fig. 7-3-24, and perform adjustments.



- Connection of Audio generator and attenuator.

600Ω : 270 (1-249-410-11)+330 (1-249-411-11)

Note: Disconnect the CN402 of the AU-182 board, and remove the MA-230 board.

- Connection of Audio level meter or distortion meter

Fig. 7-3-24.

[Adjustment Procedure]

1) E-E output level check
2) IR adjustment
3) Deviation adjustment
4) Carrier frequency check
5) Carrier level check
6) Overall level characteristics, distortion check
7) Overall noise level check

1. E-E Output Level Check (AU-182 board)

Mode	Camera recording
Signal	400 Hz, –38.5 dBs, Pin ③ of CN402 (MIC IN)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:

1) Check that the 400 Hz signal level satisfies the specified value.

2. IR Adjustment

Adjust to the optimum audio BPF characteristics of the IC.

If the characteristics is not correct, the distortion rate and S/N ratio will worsen.

Mode	Playback
Signal	Alignment tape: For checking operations (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Distortion meter
Adjustment Page	D
Adjustment Address	8E
Specified Value	Minimum distortion

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 8E and adjust so that the distortion is minimum.
3) Press the PAUSE button of the adjusting remote commander.

3. Deviation Adjustment

Adjust to the optimum audio FM signal deviation.

If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5CSP)
Measurement Point	Audio output terminal
Measuring Instrument	Oscilloscope
Adjustment Page	D
Adjustment Address	8F
Specified Value	–7.5 ± 0.5 dBs

Adjusting method:

1) Set data: 01 to page: 1, address: 00.
2) Change the data of page: D, address: 8F, and adjust so that the 400 Hz signal level becomes the specified value.
3) Press the PAUSE button of the adjusting remote commander.

4. Carrier Frequency Check (AU-182 board)

Mode	Camera recording
Signal	No signal
Measurement Point	Pin ⑨ of CN401 (REC AFM RF) (CL412)
Measuring Instrument	Frequency counter (Note 1)
Specified Value	1.500 ± 0.002 MHz

Note: Use a high impedance (above 1 MΩ) and low capacity (below 20 pF) probe.

Checking method:
1) Check that the 1.5 MHz carrier frequency satisfies the specified value.

5. Carrier Level Check (AU-182 board)

Mode	Camera recording
Signal	No signal
Measurement Point	Pin ⑨ of CN401 (REC AFM RF) (CL412)
Measuring Instrument	Oscilloscope
Specified Value	A=340 ± 40 mVp-p

Checking method:
1) Check that the 1.5 MHz carrier level satisfies the specified value.

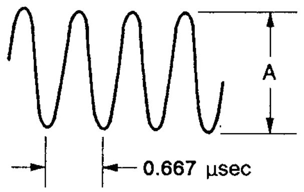


Fig. 7-3-25.

6. Overall Level Characteristic, Distortion Check (AU-182 board)

Mode	Camera recording/playback
Signal	400 Hz, –38.5 dBs, Pin ③ of CN402 (MIC IN)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter and distortion meter
Specified Value	Level: –7.5 ± 2.5 dBs Distortion rate: Below 0.8% (Note 1)

Note: 1) Value when the following filter is used

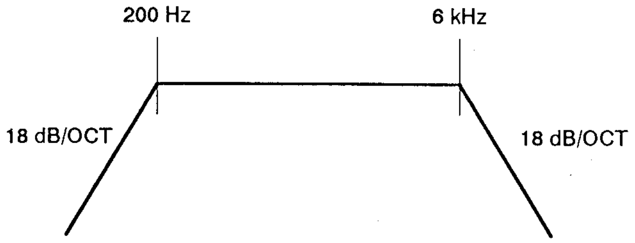


Fig. 7-3-26.

Checking method:
1) Input the 400 Hz, –38.5 dBs signal to Pin ③ of CN402.
2) Record the signal.
3) Remove the input signal.
4) Playback the recorded section.
5) Check that the 400 Hz signal level of the audio output terminal is –7.5 ± 2.5 dBs, and that the distortion rate is below 0.8% (Note 1).

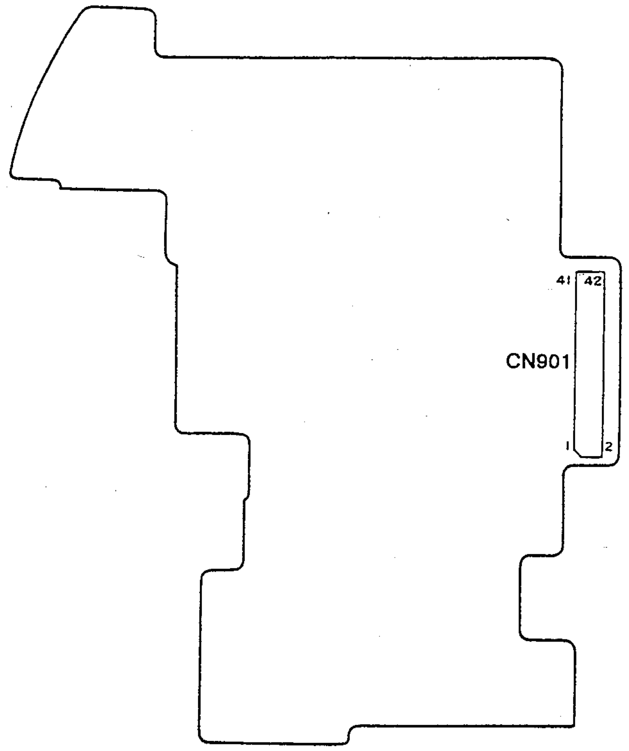
7. Overall Noise Level Check (AU-182 board)

Mode	Camera recording
Signal	No signal: Pin ③ of CN402 (MIC IN)
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter (Use an IHF-A curve auditory correction filter)
Specified Value	Below –50 dBs

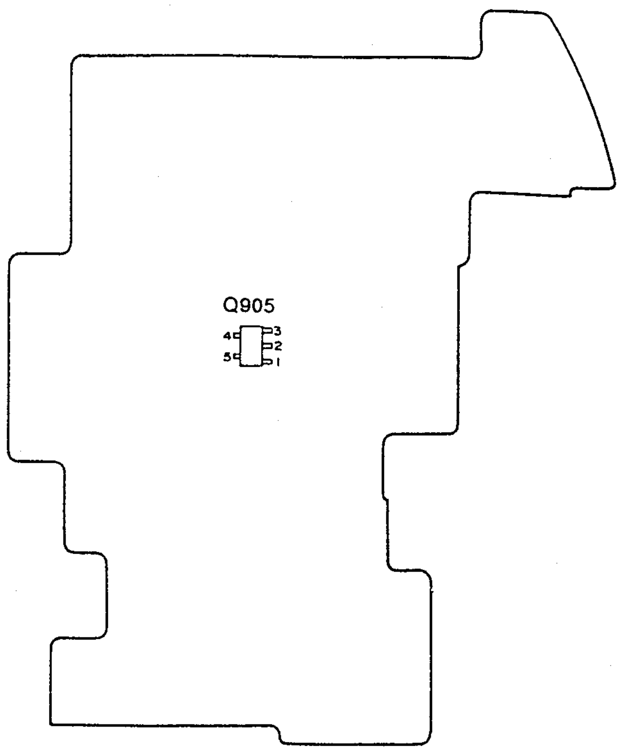
Checking method:
1) Connect Pin ③ of CN402 (MIC IN) and Pin ② of CN402 (GND) with a jumper wire.
2) Record.
3) Remove the jumper wire.
4) Playback the recorded section.
5) Check that the noise level of the audio output terminal is below –50 dBs.

3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

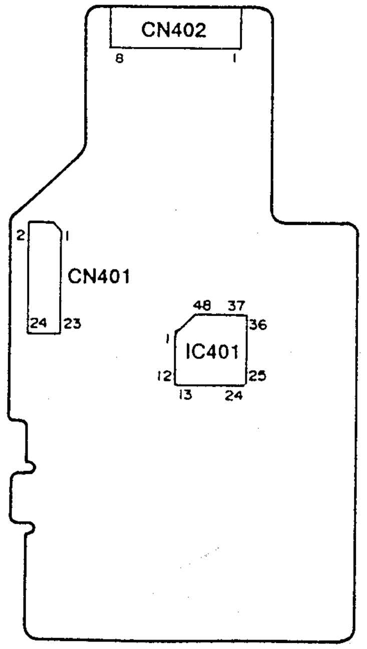
DD-76 BOARD (COMPONENT SIDE)



DD-76 BOARD (CONDUCTOR SIDE)



AU-182 BOARD (COMPONENT SIDE)



heck

k
)
d distortion
% (Note 1)

18 dB/OCT

CN402.

audio output
tortion rate is

rd)

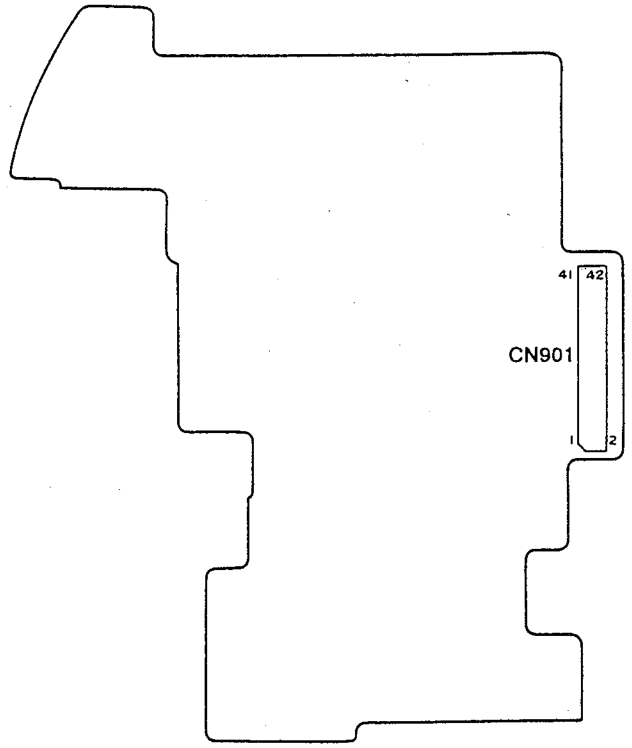
02 (MIC IN)
litory

② of CN402

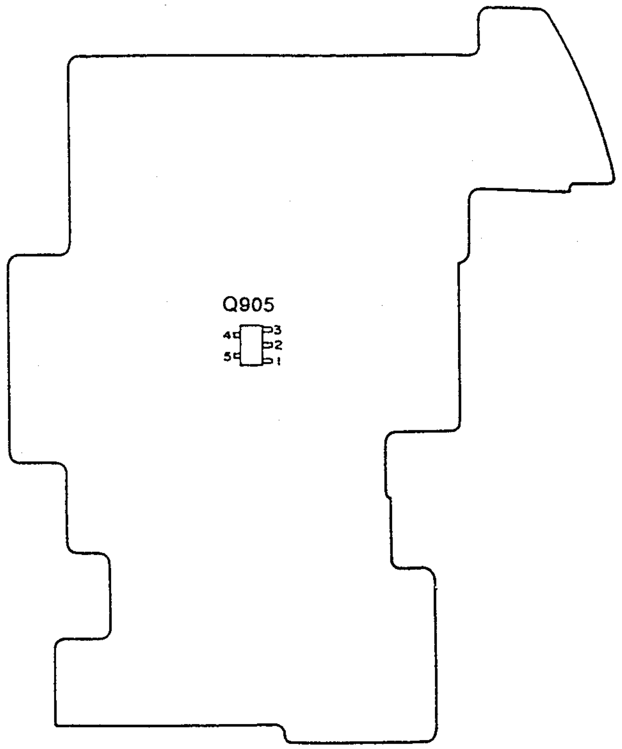
ut terminal is

3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

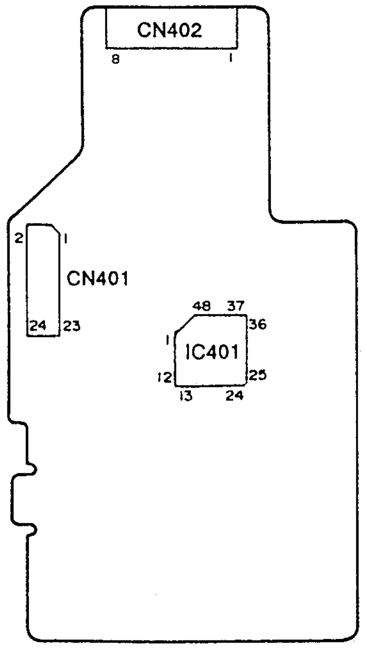
DD-76 BOARD (COMPONENT SIDE)


41
42
CN901
1
2

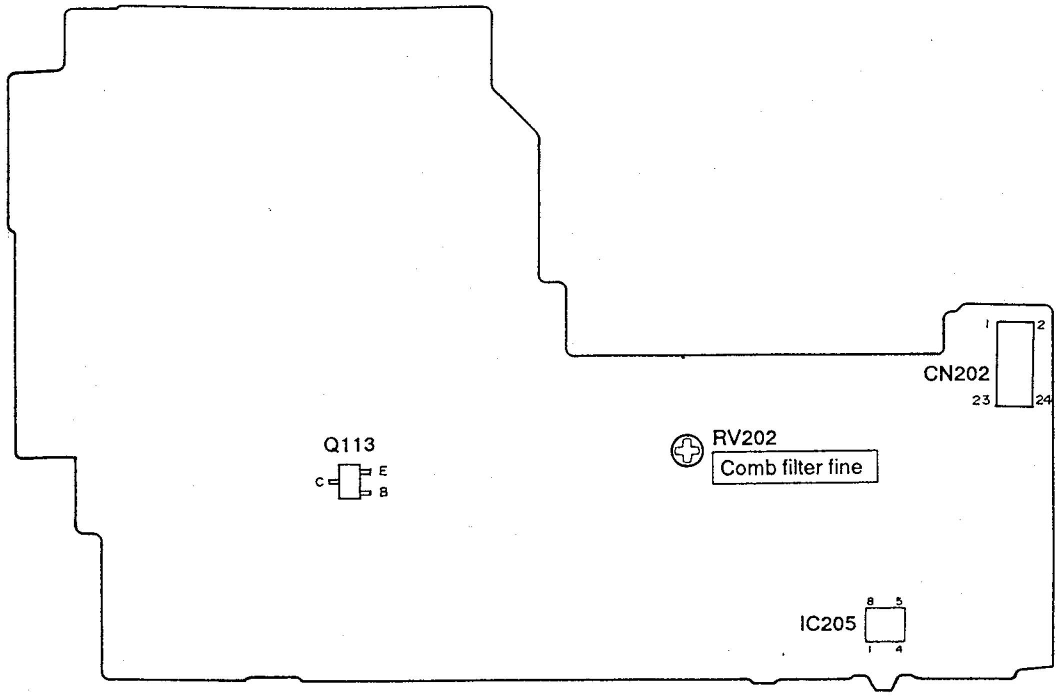
DD-76 BOARD (CONDUCTOR SIDE)



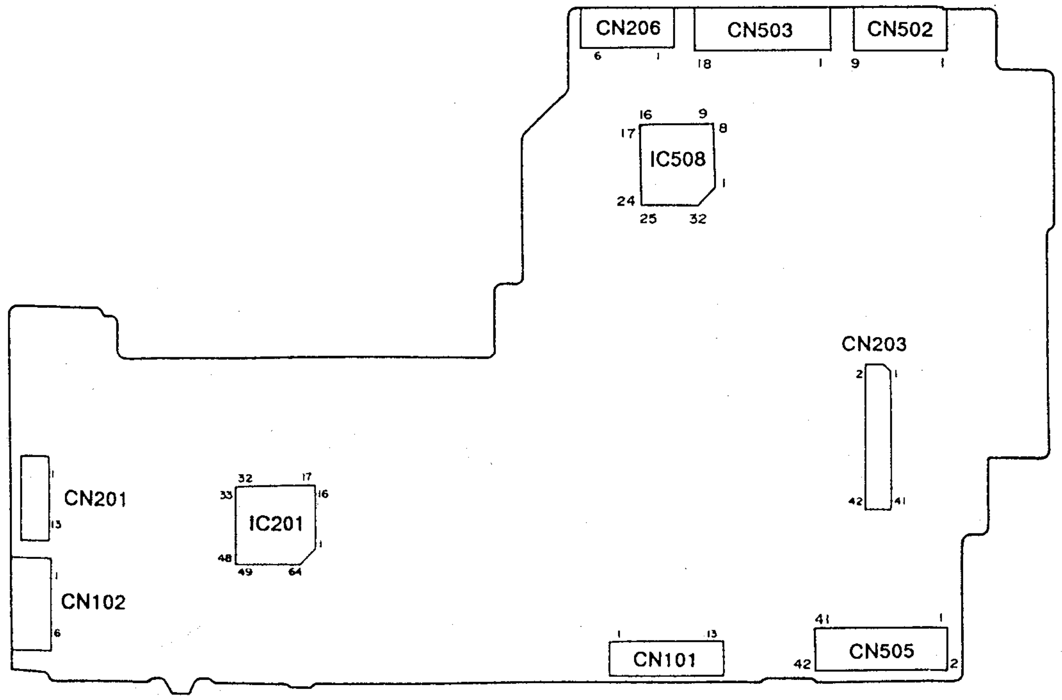
AU-182 BOARD (COMPONENT SIDE)


CN402
8
1
2
1
CN401
24
23
48
37
36
1
IC401
12
25
13
24

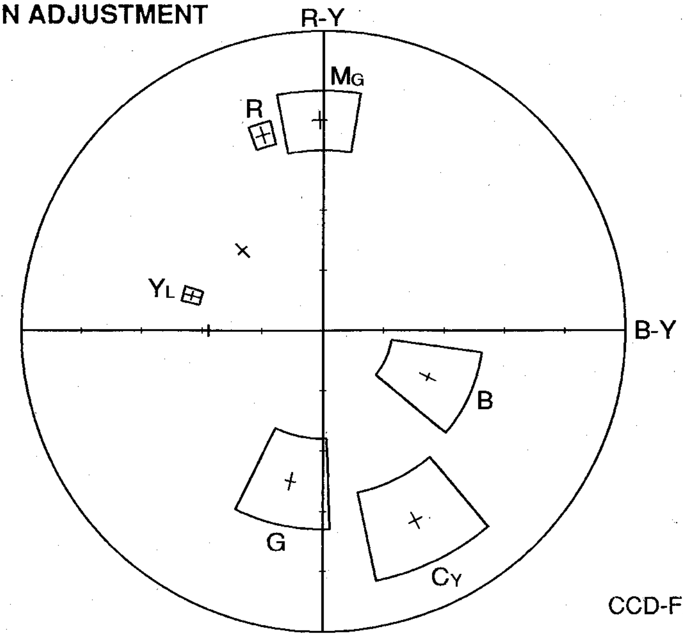
VS-123 BOARD (COMPONENT SIDE)


1
2
CN202
23
24
Q113
C
E
B
RV202
Comb filter fine
8
5
IC205
1
4

VS-123 BOARD (CONDUCTOR SIDE)


CN206
6
1
CN503
18
1
CN502
9
1
16
9
17
8
IC508
1
24
25
32
CN203
2
1
42
41
CN201
1
13
32
17
33
16
IC201
1
48
49
64
CN102
1
6
1
13
CN101
41
1
42
CN505
2

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT


R-Y
MG
R
YL
B-Y
B
G
CY

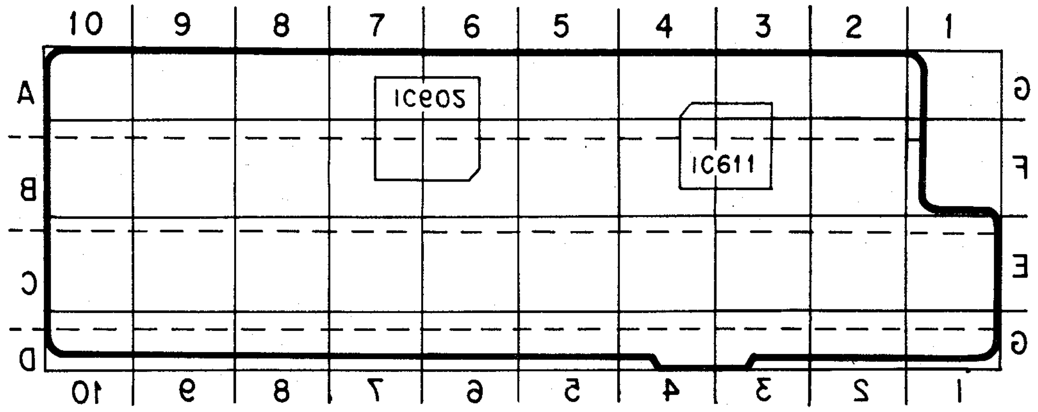
CCD-FX280E/FX280EU

Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

<PARTS REFERENCE SHEET>

You can find the parts position of mount locations applying to boards of a set.

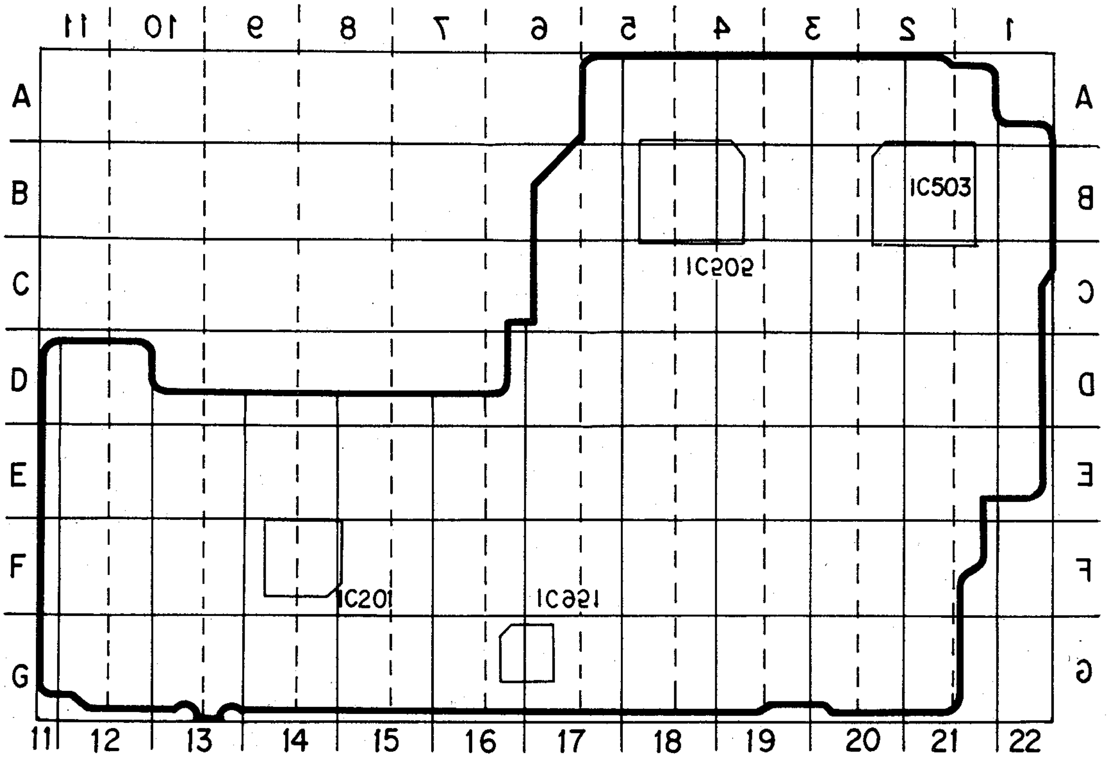
VC-159 BOARD (CONDUCTOR SIDE)


10
9
8
7
6
5
4
3
2
1
A
B
C
D
G
F
E
G
IC902
IC611

VC-159 BOARD (COMPONENT SIDE)

CCD-FX280E/FX280EU

VS-123 BOARD (COMPONENT SIDE)


11
10
9
8
7
6
5
4
3
2
1
A
B
C
D
E
F
G
IC202
IC503
IC201
IC621
12
13
14
15
16
17
18
19
20
21
22

VS-123 BOARD (CONDUCTOR SIDE)

CCD-FX280E/FX280EU